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NetworkWorld

THE NEWSWEEKLY OF ENTERPRISE NETWORK COMPUTING

New AT&T unit to put the emphasis on apps

Carrier to downplay basic transport, target vertical marts.

By Joanie Wexler
Basking Ridge, N.J.

AT&T is subtly recasting what it sells and how — de-emphasizing transport servers in favor of application packages aimed at vertical markets.

AT&T's *Traynor says users only need to make minor changes to bundles.*

The company is assembling what it calls value bundles — integrated packages of transport services, applications, tools, back-end transaction processing, help desk support and other services.

AT&T's bundles, many of which are electronic commerce-oriented, will only need minor modification by customers, said Pat Traynor, AT&T director of global services marketing.

Some, including online catalog creation tools for the retail market, are about to be announced. Technology needed for security and quality-of-service guarantees to accompany the packages is also under development in AT&T Laboratories.

Spearheaded by AT&T's Advanced Network Solutions

See **AT&T,** *page 10*

Web promoted into management position

By Jim Duffy and Ben Heskett
San Francisco

Here we go again.

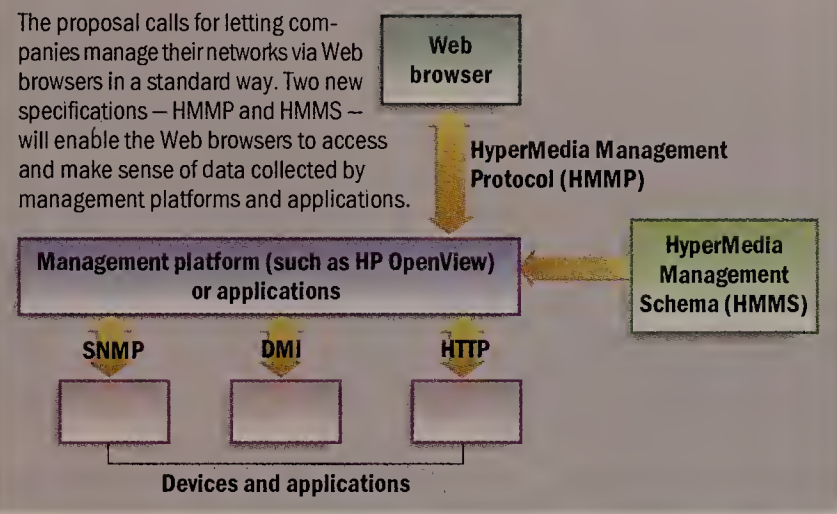
Five leading software and hardware vendors last week proposed a new standards-based approach for network management — this time through a Web browser.

The vendors — Cisco Systems, Inc., Compaq Computer Corp., Intel Corp., Microsoft Corp. and BMC Software, Inc. — say this latest net management standards effort will result in a new breed of Web-based tools

See **Web tools,** *page 9*

THE WEB-BASED ENTERPRISE MANAGEMENT PROPOSAL

The proposal calls for letting companies manage their networks via Web browsers in a standard way. Two new specifications – HMMP and HMMS – will enable the Web browsers to access and make sense of data collected by management platforms and applications.



User-designed middleware plays by the rules

By John Cox
Englewood, Colo.

An advanced messaging middleware product created by two Wall Street firms is promising a real boon to customers building distributed applications: unprecedented flexibility in creating complex interactions among programs across a network.

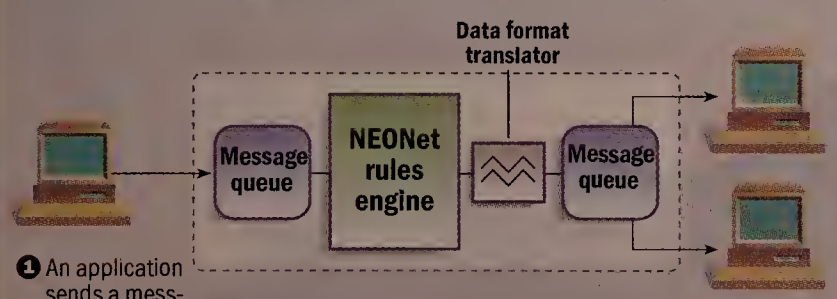
Like other such products, NEONet uses messaging to let corporate applications share data easily across a network. But NEONet also includes a rules engine, a program that lets users create, in effect, a set of instructions that are carried out based on the information inside messages.

The core of NEONet was originally developed for Merrill Lynch & Company, Inc. and Goldman Sachs & Co. to integrate applications and systems for the brokerage's Capital Markets division. Merrill Lynch has

See **Middleware,** *page 64*

PLAYING BY THE RULES

NEONet middleware's rules engine lets customers easily set up complex interactions such as workflow processes between different applications.



❶ An application sends a message, such as a purchase order valued at $10,000.

❷ The rules engine reads the message and takes predefined actions on its content. Because the purchase order is less than $100,000, for example, the engine knows to send the message to Application A for approval and Application B for notification.

Directory direction: Vendors vow to deliver LDAP support

By Bob Brown
Colorado Springs

Seemingly overnight, the Lightweight Directory Access Protocol (LDAP) has become a heavy favorite to make directory services interoperable across intranets and the 'Net.

IBM, Microsoft Corp. and Novell, Inc. last week all aired specific plans for bringing the Internet standard technology

See **LDAP,** *page 64*

The whole Web in its hands

The first of a two-part series exploring the innerworkings of the World-Wide Web Consortium. In Part Two: Can the consortium survive the Microsoft/Netscape battle?

By Ellen Messmer

It's a veritable High Society of the Web, an exclusive club of more than 125 companies that plunk down as much as $50,000 in annual dues for the privilege of shaping core Web technologies such as HTML. But the dues at the World-Wide Web Consortium (W3C) are well worth it because this club's members can't afford to miss the first peek at the technical specs that will define tomorrow's Internet and corporate intranets.

Among the most active members are the industry's leading network and software suppliers, including Microsoft Corp., Netscape Communications Corp., IBM, Digital Equipment Corp., Hewlett-Packard Co., Adobe Systems, Inc., Spyglass, Inc. and AT&T.

Whether it's the consortium's twice-yearly Advisory Committee meetings or the dozens of

See **Web consortium,** *page 14*

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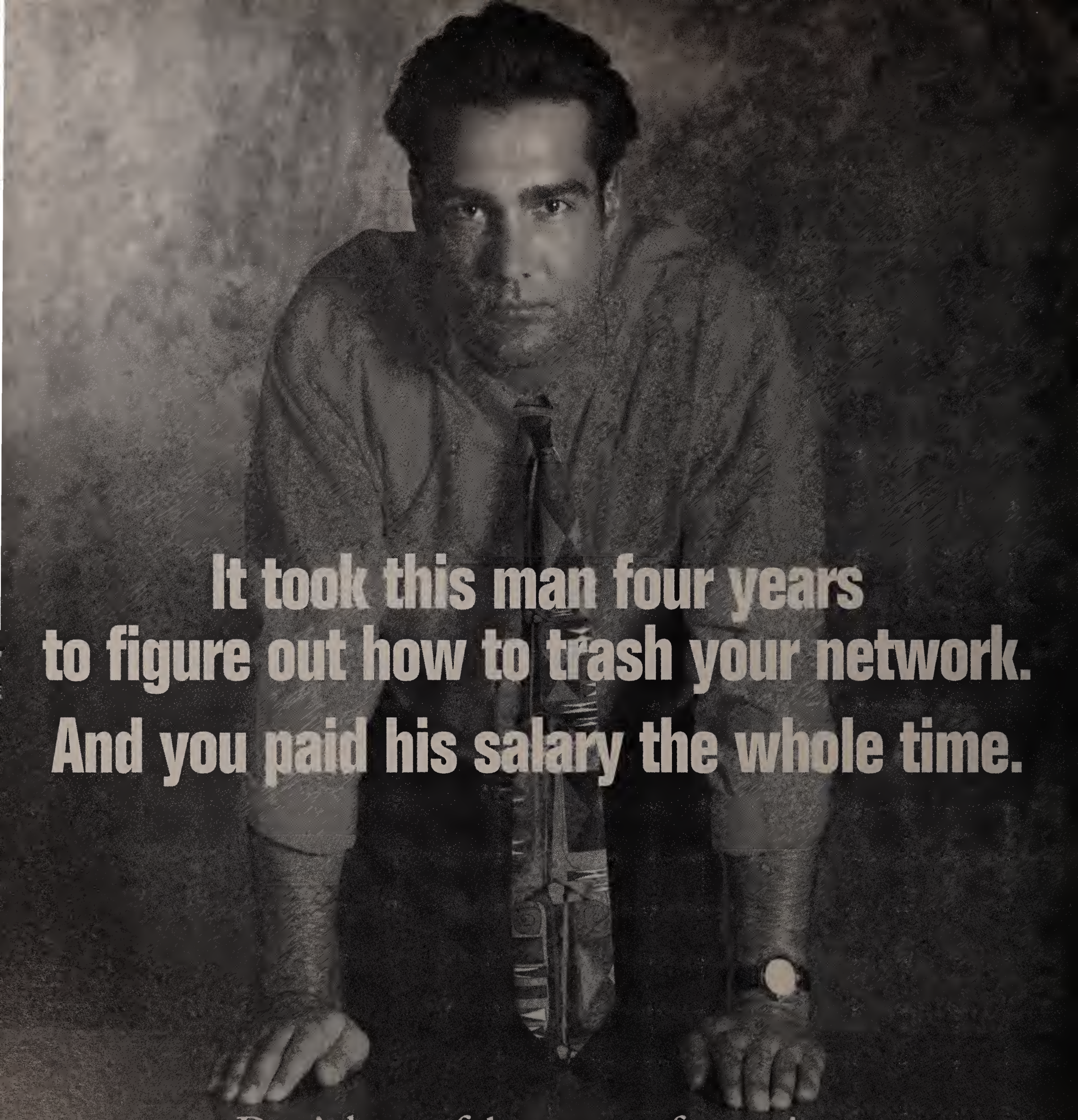

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This Week

News+

We've reorganized the News+ section to make it easier to use. Now, no story is more than a key-click away from the News+ page.

- **Web-based management:** Download detailed overviews of proposals to use HTTP to carry management data between network devices and Web browsers, and see how some companies are already using browsers to watch over their nets.
- **Message-oriented middleware:** Get up-to-speed with a middleware primer and see what middleware vendors are working on.

  Directories: Vendors are racing to develop directories based on the Lightweight Directory Access Protocol. Learn just what this is, and download software so you can start playing with it yourself.
- **The Web:** Read up on how the World-Wide Web Consortium is working to enhance HTTP.
- **Security:** Download our Buyer's Guide to application layer firewalls and read a firewalls FAQ.
- **Switching:** Grab some switching primers, then download our Buyer's Guides to switches.
- **Cellular fraud:** See what phone companies are doing to stamp it out — and why one telecommunications lawyer opposes a federal effort to crack down on cloning.

NetRef

Download complete results and specifications for the servers reviewed on page 40. Select Buyer's Guides and Reviews, then Server Test Series.

this week's pick

Kevin Han, vice president of Just In Time Solutions, recently gave a talk on managing intranet projects. You can call up a hyperlinked version of the talk, which includes overviews of everything from metrics and tools to developing documentation, at http://www.justintime.com/intranet/contents.htm.

HOW TO GET ON TO NETWORK WORLD FUSION

At the welcome screen, click on Registration and follow the instructions. Subscribers, keep your NWF number — highlighted on the front cover's mailing label — handy during registration. Non-subscribers must fill out an online registration form.

NetworkWorld Fusion

CONFERENCE PICK

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Vice President *Gore and the White House form cyberthreat commission after worries over terrorism. Page 8.*

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The first Pentium Pro servers NetworkWorld PC WORLD SERVER TEST SERIES *we've tested make a solid showing.*

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Frame relay and private lines pushed NetworkWorld BROADBAND TICKER *ATM into the background last quarter.*

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NetworkWorld's *Mission: To provide news and analysis that help network IS professionals deliver the network computing infrastructure and distributed applications required to meet evolving business needs.*

News briefs, July 22, 1996

Put it on your calendar

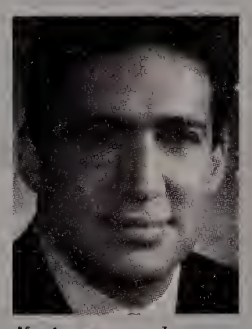
As expected, Netscape Communications Corp. will host a gathering of vendors next week — including Hewlett-Packard Co., Lotus Development Corp. and Microsoft Corp. — to begin work on a set of standards for scheduling meetings via the Internet (*NW,* July 8, page 1). The Internet Calendaring Summit will take place on July 24 at Netscape headquarters in Mountain View, Calif. The vendors are expected to submit their work to the Internet Engineering Task Force. Some IETF officials and other vendors are reportedly miffed that Netscape appears to be taking credit for what was supposed to be a vendor-neutral process.

Cabletron widens Spectrum

Cabletron Systems, Inc. this week will add network performance analysis and security management capabilities to its Spectrum management platform by way of integration agreements with Network General Corp. and Axent Technology, Inc., respectively. Network General's Distributed Sniffer will be available for Spectrum 3.1 this quarter; Axent's Omniguard will be integrated with Cabletron's software at a later date.

Sybase feeling the heat

Financially struggling Sybase, Inc. last week started making the first of about 700 layoffs and announced that Mark Hoffman was stepping down as president and chief executive officer to be succeeded by Mitchell Kertzman. Kertzman was the founder and CEO of Powersoft Corp., which Sybase acquired in February 1995. Hoffman will remain as the database vendor's chairman of the board.



Kertzman *to take over as Sybase CEO.*

Ain't your average Joe

SunSoft, Inc. of Menlo Park, Calif., last week unveiled the beta release of its Java object request broker (ORB), called Joe. The software, written completely in the Java programming language, complies with the standard Common Object Request Broker Architecture (CORBA). ORBs let objects on different networked computers work with each other. Joe can be downloaded free from the SunSoft Neo home page (http://www.sun.com/sunsoft/neo/).

IBM's intranet interest grows

IBM last week unwrapped two services aimed at helping users get intranets up and running faster. The services include a starter kit that offers planning, consulting and education for users exploring the possible installation of an intranet. The other service, called SecureWay, offers intranet users an assessment of their current net security and an emergency response team should a breach occur. Both services are available now.

Digital's Walker walks

Digital Equipment Corp. last week announced that Larry Walker, vice president and general manager of its network product business unit, has resigned after 15 years with the company. Walker has accepted a position as chief executive officer at a start-up company in the Internet commerce market. Walker's resignation comes just two weeks after Digital announced it will take a $475 million restructuring charge against fourth-quarter earnings and lay off about 7,000 employees.

Digital's *Walker resigns.*

Get your half-priced voice here!

Network Equipment Technologies, Inc. last week announced PrimeVoice voice compression modules for its IDNX bandwidth manager that promise to cut voice costs by at least half. PrimeVoice reduces the current 32K bit/sec toll-quality rate to 16K bit/sec through the implementation of standards-based Low Delay-Code Excited Linear Prediction technology. Other modules can reduce voice to as low as 4.8K bit/sec for use in non-toll-quality applications. The modules start at $12,750.

Rivals target frame relay switches

Netlink, Hypercom heat up the market with switches that give customers more options.

By Michael Cooney
Framingham, Mass.

As the summer wears on, activity in the frame relay switch market is really heating up.

Netlink, Inc. and Hypercom, Inc. last week separately rolled out switches designed to let customers build more efficient frame relay networks and inexpensively add services such as voice over frame to them.

Netlink's *Walton says demand for private frame relay network components is increasing.*

Their announcements follow on the heels of Andrew Corp.'s introduction last month of a low-cost frame relay switch called the SwitchLynx/FR, which is designed to let users build a backbone network capable of supporting multiprotocol data, voice and video at a lower cost (*NW,* June 24, page 1). All of these firms hope to compete — at some level — with frame relay leaders such as Cascade Communications Corp., Newbridge Networks, Inc. and Cisco Systems Inc.'s StrataCom subsidiary.

"Frame relay is booming, so there is plenty of space for these smaller competitors," said Rosemary Cochran, principal with the Vertical Systems Group consultancy in Dedham, Mass. "They offer some nice packages for users, whether they are looking to build a private net or enhance their public net access."

Netlink is targeting private frame relay net builders with its new OmniLinx Switch. Based on its OmniLinx 4000 frame relay access device (FRAD), the Reduced Instruction Set Computing-based OmniLinx Switch can support two LAN interfaces and as many as 16 T-1 or E-1 interfaces.

The switch's software provides class-of-service support to ensure that mission-critical SNA data is transported without delay and TCP/IP traffic is handled without dropping packets, said Roger Walton, Netlink's vice president of marketing. OmniLinx Switch nodes can also be linked across a public frame relay service and can support hybrid public/private nets.

"We see growing demand for private frame relay network components," Walton said. "By combining the functions of a traditional FRAD with a switch, users eliminate costs by reducing equipment and simplifying their enterprise infrastructure."

The OmniLinx switch is available, starting at $5,000.

Over at Hypercom, the company's Network Systems division announced a stackable switch/router and switching software for its line of Integrated Enterprise Network (IEN) communications boxes, which contain router, FRAD, data service unit/channel service unit and gateway technologies.

The new device, dubbed the IEN 2000, is a two-slot stackable switch that can be strapped together in groups of as many as four units. It is aimed at branch office users who need to combine voice, fax and data over a frame relay backbone, said Chuck Hellquist, director of sales at Hypercom.

The IEN 2000 will run new Enterprise Multiservice Switching (EMS) software that Hypercom is now loading into its full line of IEN boxes and that can be added to existing IENs. EMS provides support for packet, circuit or cell switching, depending on the customer's needs, Hellquist said. For example, packet switching is reserved for frame relay or X.25, circuit switching supports traditional time-division multiplexing and cell switching is reserved for Asynchronous Transfer Mode, Hellquist said.

The IEN 2000 chassis will be available in September for $500, while the software is available now at a starting price of $4,000. A typical fully figured branch device costs between $4,000 and $10,000.

©Netlink: (508) 879-6306; Hypercom: (602) 866-5399.

Web server vendor takes Microsoft to task over WinNT

By Carol Sliwa

Netscape Communications Corp. promotes its FastTrack and Enterprise servers as ideal for Windows NT Workstation. That may be true for NT 3.51, but Version 4.0 may throw a wrench into Netscape's marketing spiel.

"They're taking a fairly draconian approach when they say you can have 10 unique IP addresses in 10 minutes. That means you can't use it for the Web at all," O'Reilly said.

Microsoft Corp. is considering allowing only 10 inbound connections to a Web server within a 10-minute period and that's how the current beta works. This would force users to buy the more expensive NT Server 4.0 product, contends Tim O'Reilly, whose company, O'Reilly & Associates, makes WebSite servers that typically run on NT Workstation.

"I certainly don't argue with the prospect of them saying, 'We want to differentiate between NT Workstation and NT Server,' " O'Reilly said. "But they're really taking a fairly draconian approach when they say you can have 10 unique IP addresses in 10 minutes. Effectively, that means you can't use it for the Web at all."

The Workstation product was not designed to be a server in the first place, counters Jonathan Roberts, Microsoft's director of marketing for Windows.

See **Web server,** *page 8*

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Group moves to make mixed APPN and TCP/IP nets fly

By Michael Cooney
Raleigh, N.C.

Vendors at the APPN Implementers Workshop (AIW) last week pushed along a variety of new specifications that would let customers more easily manage mixed SNA and TCP/IP networks, and exchange data between legacy and emerging distributed applications.

New proposals include a way to link Java-based applications with IBM's Advanced Program-to-Program Communications-based SNA applications and a specification that would let users more easily control SNA networks from Simple Network Management Protocol-based managers.

The AIW — whose members include IBM, Cisco Systems, Inc., 3Com Corp., Bay Networks, Inc. and others — crafts standards related to Advanced Peer-to-Peer Networking and other technologies such as Data Link Switching (DLSw). The group passes some of its work to other standards bodies, such as the Internet Engineering Task Force (IETF), for their approval.

The AIW is now considering a proposal by IBM that would let Java and APPC applications freely interchange data, said Chuck Brotman, chairman of the AIW. The proposed feature set would let Java applications run over IBM's APPN/High Performance Routing (HPR)-based nets, as well, he said.

Also, IBM is prototyping a feature that would let Java applets communicate with applications based on Common Programming Interface for Communications (CPI-C), the API for APPC-based applications. "We'll add a network tool kit that will let users make CPI-C calls directly into Java applets and vice versa," Brotman said. IBM will make the tool kit available on its Web site late this year, he added.

IBM is also making available a new specification for encapsulating SNA alert data in SNMP traps, which will let customers employ SNMP management systems such as Hewlett-Packard Co.'s OpenView to control SNA resources. IBM's Nways Campus Manager LAN for AIX already supports the feature, but IBM would like to see other vendors implement the specification in their products.

AIW
APPN Implementers Workshop

"Right now, some vendors can't see the SNA alert data, and others like us and Cisco each do it a different way," said David Bryant, director of SNA technology for 3Com. "At the next AIW meeting, we'll set up a group to try and standardize on this feature."

Other proposals moving toward completion include:

■ The ATM Interworking specification. This describes how vendors could map HPR class of service directly to Asynchronous Transfer Mode's quality of service specifications. This would enable APPN/HPR users to utilize APPN's class of service, which defines route security, transmission priority and bandwidth between session partners across an ATM net. The spec received a "closed pages" recommendation and will be presented this fall to the ATM Forum.

■ TCP/IP Domain Name Service (DNS). The AIW is exploring ways of allowing users to mix and match APPN and TCP/IP addresses inside a DNS server. This would let users more easily find resources in mixed nets. This specification is currently informational only.

■ Extended Border Node (EBN). EBN allows users to link multiple large APPN nets or subdivide single large APPN nets into smaller interconnected nets. The specification is expected to be approved late this year or early in 1997. ■

Microsoft's J++ tool set beta breaks new ground

By John Cox
Redmond, Wash.

Bowing to what it termed "unprecedented demand" from customers, Microsoft Corp. last week loaded a beta copy of its Java development tool set on its World-Wide Web site and threw open the doors.

Visual J++, formerly known as Jakarta, is a graphical tool set for building applications in the Java programming language, which is winning widespread acceptance as a programming tool for Internet/Web applications. Having once downplayed Java, Microsoft is determined now to incorporate Java firmly into its object architecture and provide tools for enabling the fastest Java application performance on the market.

Developers create a J++ application by working first with a wizard, a program that guides them through a set of questions. Based on the answers, J++ generates a skeleton application, and from there, developers can change or add Java code. The high-performance J++ compiler transforms the Java source code into what are known as byte codes, which are then cleaned up with the J++ debugger.

The byte codes then are shipped to the client or server platform, where they are translated or interpreted by the Java Virtual Machine for the underlying operating system and executed.

Microsoft licensed Java from its creator, Sun Microsystems, Inc., but added the visual interface from Microsoft Visual C++ and wrote its own compiler and debugger.

Applications built with J++ have the added feature of being ActiveX controls, and they can use or be used by any other ActiveX control, according to Sue Bohn, J++ product unit manager.

J++ is scheduled for general release this fall. Pricing was not disclosed.

The beta product is available now free of charge from the Microsoft Web site (http://microsoft.com/visualj/). ■

Gov't may meddle in nets

By Ellen Messmer
Washington, D.C.

Calling the threat of cyberattacks on utilities, banking and communications a national security issue, the White House last week took the first step to fashion a defense policy that may lead to more government control over networks owned by the private sector.

Gore *sticks to key-escrow guns.*

President Clinton ordered the government to set up the Commission on Critical Infrastructure Protection, comprising representatives from 10 federal agencies, mostly from defense and law enforcement departments. The commission will be chaired by someone yet to be named from the private sector. The chairperson will be made a full-time government employee.

The commission is supposed to recommend a national strategy for protecting key industry systems from both physical and computer-based attacks. The cyberthreat commission may well seek to impose new security reporting or technical requirements on privately owned networks, which would aid the government in countering cyberattacks.

"What we need then is a Manhattan Project for infrastructure protection, a cooperative venture between the government and industry to come up with workable solutions to one of our most difficult challenges," said Deputy Attorney General Jamie Gorelick.

What is it good for?

Emphasizing the need for new policy, Gorelick last week told the Senate Government Affairs Committee that national cyberdefense is more than a military problem because "every person and institution that is connected to the information superhighway is vulnerable to attack.

"The ownership of critical infrastructures is largely in private hands," Gorelick noted, but the government today has limited ability to require private companies to take protective measures.

Not all sold

Some senators seemed skeptical of the White House plan. "The private sector seems not to want the government's help," pointed out Sen. William Cohen (R-Maine). "This stems from the sense that government can't protect its own systems and that government information security is in a shambles."

Capitol Hill also showed cool reaction to Vice President Gore's statement that the U.S. government is on the way to establishing a global key-management infrastructure using key escrow that will have third parties hold spare keys to confidential encrypted data.

According to the vice president, strong commercial encryption products that use government-approved key-escrow systems will be eligible for general export licenses.

Currently, only 40-bit encryption, which can be broken with readily available computer resources, is approved for mass export. ■

Web server

Continued from page 6

However, Microsoft apparently is still listening to what the outside world has to say. Roberts said no decision has been made about the degree of enforcement that will be done in the final version of Workstation 4.0.

But the 10-user, 10-minute limit has been incorporated into the release candidate version that is currently circulating.

NT Workstation 3.51, the precursor to NT 4.0, already has a limit of 10 inbound connections for simultaneous access/use of peer-to-peer networking services, such as file and print. NT 3.51, without the 10-minute time limit, allows a large number of users to access the software.

Now, with the Web entering the picture, Microsoft has to come up with a definition for peer service that would apply to this new Internet/intranet plot twist. As a result, the Version 4.0 licensing agreement permits a maximum of 10 computers to connect to the Workstation computer for "peer Web services."

"We're very explicit saying that [NT] Workstation is designed to be a workstation product," Roberts said.

But O'Reilly said a large number of people are running Web server on NT Workstation, which sells for $319. If they have to upgrade to the NT Server version, that costs an extra $680.

"It was one of the inside jokes going on for a while: Netscape was arguing you could use a Workstation to be a Server," said Giga Information Group analyst Rob Enderle.

Netscape officials could not be reached for comment.

With the new limitations on NT Workstation, competitors may have to advise their customers that they will have to run Web servers on NT Server. Since Internet Information Server (IIS) is bundled with NT Servers, users might opt for it rather than pay for Netscape's FastTrack or O'Reilly's Software. ■

Feds OK export-controlled software

The U.S. government has forbidden software vendors from shipping products with strong encryption over the Internet, for fear their wares might end up abroad.

But the government let up a bit last week, granting Netscape Communications Corp. permission to download the more highly secure domestic versions of its software products.

To date, the export-controlled RC4 128-bit, 56-bit Data Encryption Standard and 168-bit DES3 versions have been available only through the mail, retail outlets and resellers.

Those who enjoy the convenience of downloading their software had to settle for the easier-to-crack RC4 40-bit versions that the government has approved for foreign use.

In order to secure the government's permission to download its more secure software, Netscape had to agree to post a software eligibility affidavit that customers must fill out.

Users downloading the software will find a note warning them that the software may not be exported outside the U.S. or to any non-U.S. citizen.

A name, telephone number, and residential and E-mail address are required, as well as check-mark confirmation that the individual is a U.S. citizen. The information is verified using publicly available databases, and the user's Domain Name Service address is checked to ensure it is not foreign, said Jeff Treuhaft, Netscape's director of security.

— Carol Sliwa

Bay, Lucent swap patents to build multimedia nets

By Jim Duffy
Santa Clara, Calif.

Today, Marshall McLuhan might say, "The multimedia is the message."

And that notion could easily apply to Bay Networks, Inc. and Lucent Technologies, Inc., which last week agreed to share each other's technology in order to bring multimedia networks to the masses. The companies are attempting to define an architecture for a single customer premise network that merges voice, video and data. At the same time, the plan promises to reduce customers' costs, increase availability, deliver quality of service (QoS) guarantees and ease administration.

To make a multimedia connection, Bay and Lucent have cross-licensed each others' technology and patents. To Lucent, Bay will deliver source code for its Optivity network management system and routing software, including Bay's implementation of the IETF's Resource Reservation Protocol.

Lucent will also obtain Remote Monitoring probe and agent code, and ATM Private Network-to-Network Interface and Integrated PNNI technology from Bay.

A multimedia event

Lucent will license from Bay:
- Optivity network management source code, and RMON probe and agent code
- Routing source code
- PNNI and I-PNNI routing protocol technology
- RSVP source code

Bay will get from Lucent:
- Real-time switching technology
- Multimedia technology
- Communications middleware
- Network signaling software

To Bay, Lucent is expected to surrender real-time switching and multimedia technology, communications middleware and network signaling software.

Together, the companies will add these technologies to new and existing Bay and Lucent products so users can install a single multimedia infrastructure of interoperable LAN and ATM switches, routers, private branch exchanges and servers. This network would also be managed and administered from a single console under the Bay/Lucent vision.

What's up first?

Indeed, the first deliverable from the alliance will be an integrated voice/data network management application, based on Bay's Optivity, that incorporates fault management of Lucent's Definity ECS PBXs. This application will ship in the third quarter.

The companies are also developing wiring closet, backbone and enterprise switches, and QoS enhancements for Lucent's Multimedia Communications Exchange server, which enables real-time setup of multimedia sessions synchronizing voice, data and graphics (*NW,* Nov. 6, 1995, page 17). The first of these products will roll out in 1997, the companies said.

Users are enthused but found the plan one-sided.

"Lucent has really come forward in terms of obtaining certain information from Bay and putting together a team," said Debra Chrapaty, director and group manager of information technology at the National Basketball Association in Secaucus, N.J. "I'd like to see what Bay is putting together, and I haven't."

Whatever they're putting together, both Bay and Lucent face some challenges in making their alliance work, analysts said.

"This is a very nascent market and, to a degree, it's somewhat of a playground," said Nick Lippis, president of Strategic Networks Consulting, Inc. in Rockland, Mass. "You have a very mature technology base with the PBX and the 250-plus features that are with it. How do you unlock that and add more value towards the desktop or to end users? The challenge is really going to be that technology integration." ■

CORRECTIONS

The July 15 article on Tinwald Networking Technologies' Internet SnapShot product (page 27) contained incorrect pricing information. The product costs $99 per administrative console.

The July 1996 issue of *IntraNet Magazine* incorrectly reported the price of PLWeb-Turbo from Personal Library Software. The product sells for $4,995.

Web tools

Continued from page 1

that will reduce the complexity and cost of enterprise management. The Web-Based Enterprise Management (WBEM) group has the backing of about 70 other companies.

WBEM "solves the integration problem and unleashes the creative ability to do management applications," said Ronnie Ward, vice president of enterprise computing at Compaq. It takes the integration impetus off management platforms, he said.

But history is not on the side of such ambitious management standards initiatives, as anyone familiar with the Open Software Foundation, Inc.'s (OSF) Distributed Management Environment or the Management Integration Consortium knows. And this effort is wrought with some formidable challenges, as well, including the following:

■ It lacks the blessing of Sun Microsystems, Inc., creator of the Java programming language, which is increasingly being used for Internet and Web-based management applets.

■ Some of the effort's backers do not appear to have their hearts entirely in it.

■ As with other 'Net-related efforts, political and competitive undercurrents are swirling.

■ It is big on concept and small on content; specifications still have to be defined and activities have to be coordinated among more than 70 vendors and at least two standards groups.

"Who is going to do the work?" asked Joe Clabby, an analyst with Aberdeen Group, Inc. in Boston. "It's a nice architectural layout. But as you put together an architecture, you want to figure out who is going to take the action items to make it happen, and I couldn't find that."

Link to Network World Fusion for more info, including detailed overviews of the HMMO proposals. Select News+.

Network World Fusion
http://www.nwfusion.com

The WBEM concept

The WBEM concept defines three areas for standardization. One is a HyperMedia Management Schema (HMMS), which is an extensible data model for representing managed objects. Another is the HyperMedia Management Protocol (HMMP), an HTTP-based protocol for communicating between management services, applications and agents.

The third piece is the HyperMedia Object Manager (HMOM), a C++ object broker that will pull together management data on behalf of management applications. HMOM is based on Microsoft's OLE technology.

HMMS will be defined, maintained and updated by the Desktop Management Task Force (DMTF). HMMP is being debated within the Internet Engineering Task Force, and a reference implementation of HMOM will be placed in the public domain.

Vendors expect WBEM-compliant products to hit the market next year.

Though the WBEM vendors said their plan embraces existing standards such as Simple Network Management Protocol and the Desktop Management Interface, interoperability with devices supporting these standards is not guaranteed.

"We have to get the details right," said Jeffrey Case, president of SNMP Research, Inc. in Knoxville, Tenn., one of the 70 companies supporting WBEM, and coauthor of the SNMP protocol. "It's difficult for any five companies this big to get anything done."

This may be why users are cautious and even skeptical about WBEM.

"I give the marketing boys an 'A' for this," said Frank Belland, senior systems architect at Lockheed Martin in Orlando, Fla. "How real is the support? Why don't we go off and do another OSF DME?"

"I'm certainly not going to run and buy their first product," said Sean Blake, systems analyst for Eli Lilly Co. in Indianapolis. "There always seems to be two different standards, and none ever gets flushed out, so the market decides what to buy."

No one can blame Sun if WBEM doesn't fly or credit the company if it does. Sun is keeping a safe distance from the effort while it determines WBEM's effect on Java.

Differences between Java and WBEM exist in the user interface and in implementation, said Brian Biles, director of Solstice product marketing for SunSoft, Inc.

The WBEM browser interface is based on HTML; the Java user interface is not. Also, WBEM implementations could hit interoperability snags if deployed across different object models, Biles said. This is not the case with Java, he claimed.

"We think [Java's] actually a better choice for doing something as broadly heterogeneous as management," Biles said.

Microsoft, however, believes Sun will change its tune.

"Sun has its own agenda, and eventually they'll come around because this is very good," said Bob Krueger, general manager for systems management products at Microsoft.

But even some vendors that back WBEM are doing so cautiously. IBM's Tivoli Systems, Inc. subsidiary, for example, will back HMMS insofar as it progresses through the DMTF or becomes a de facto standard. HMMP, though, is another matter.

"We're going to be in a more wait-and-see attitude on that one," said Chris Grafft, senior vice president of business development at Tivoli. "We don't exactly understand the path that will take to becoming something that would add value to existing protocols."

Though the technical and installed-base challenges facing WBEM are many, the political and competitive challenges that accompany any standards effort may be the most daunting. Some of these companies just flat out do not like each other. ■

Adding to the alphabet soup

HMMP
The HyperMedia Management Protocol is a communication protocol that lets Web browsers access and receive data from management platforms and devices.

HMOM
The HyperMedia Object Manager gathers data from applications based on SNMP, DMI and other technologies so that it can be represented on a Web-based console; reference implementation (C++) and spec to be placed in public domain.

HMMS
The HyperMedia Management Schema is a data model for representing managed objects over the Web.

AT&T repackages ANCS as intranet service offering

By Joanie Wexler
Basking Ridge, N.J.

With many companies leery of running their intranet backbone across the public Internet, service providers are rushing in with managed IP networks.

In the latest example of this, AT&T last week announced it is repositioning its AT&T NetWare Connect Service (ANCS) as an intranet offering. The company joins Sprint Corp., ANS and others with interenterprise, managed IP services.

To do this, AT&T added source address filtering to its IP support within ANCS and changed the name of the offering to AT&T WorldNet Intranet Connect Service. The idea is that customers' IP-based World-Wide Web servers can sit between the Internet — which hosts HTML applications meant for public access — and the WorldNet Intranet Connect Service network — which makes its applications available only to a company's own end users and authorized business partners.

Competing offerings, such as those provided by some Internet service providers (ISP), attempt to carve IP- and HTML-based based virtual private networks out of the Internet itself.

"But there is still resistance to running [what need to be] secure transactions on the Internet among the Fortune 1,000," said Tom Pincince, director of network strategy service at Forrester Research, Inc., a consulting firm based in Cambridge, Mass.

The public Internet has its benefits, such as a broad reach, said Dave Devcich, manager of information technology at Beveridge & Diamond, P.C., an environmental law firm in Washington, D.C. But his company needs "secure communications channels to reassure our clients. I don't think the Internet will ever really provide that as long as it is managed by multiple entities. You can have firewalls at either end, but the transmission in the middle is a free-for-all."


AT&T's *Evslin*

Others disagreed. "I can offer a secure [virtual private network] over the Internet backbone today" by virtue of encryption, countered Alan Taffel, vice president of sales and marketing at UUNET Technologies, Inc., a worldwide ISP in Fairfax, Va.

Taffel plans to soon announce service level guarantees for network availability on the UUNET backbone.

Available since November, ANCS has supported both IP and Novell, Inc. IPX protocols and has featured a gateway to the Internet as well as a centralized Novell Directory Service. But it has run IP unfiltered until now.

In addition to the filtering technology, AT&T has added an option to allow users to buy IP service only. But if customers have applications designed for both IPX and IP, "they no longer need two networks to support both protocols," said Tom Evslin, vice president of AT&T's WorldNet service.

Pincince noted that there was no technical wizardry with the announcement and that "anyone could turn this feature on in their networks in half a second."

In fact, many already have. ANS, a large ISP in Elmsford, N.Y., has had a closed-network IP service called ANS Intranet Solutions Service since March, which it enhanced last week with a help desk support option. Sprint launched its Global IP Service earlier this year, and Infonet Services Corp. and CompuServe, Inc. also have offerings. MCI Communications Corp. builds managed IP networks for customers on a custom basis through its SHL SystemHouse company, a spokesman said. ■

AT&T

Continued from page 1

unit — to be officially announced in 1997 — the group is helping to de-emphasize the underlying connectivity services telecommunications managers have traditionally bought.

For example, the company is poised to announce a catalog creation application on top of the Microsoft FrontPage authoring tool that is bundled with its Easy World-Wide Web hosting services, said Mike Rich, director of product management for AT&T's Internet hosting and application services.

A set of templates, which hook to back-end product and inventory databases, will allow retail companies to quickly pull information from various files and databases and merge it into an electronic catalog.

Another offering, InView, which became available last year, offers common workflow applications and communications interfaces on top of a private AT&T network for the insurance industry.

AT&T is a trendsetter in its shift to sell functions rather than networks, but others appear to be on the same path: MCI Communications Corp., for one, is also taking a look at this approach, a company spokesman confirmed last week.

In AT&T's case, vertical offerings initially target the insurance, banking, retail, travel and health care industries. AT&T will also go after the utilities industry. More generic value-added bundles for horizontal markets include Order Express, an automatic order processing service for call centers that verifies a credit card number and completes an order without a live agent. It became available last year. Other possibilities for bundles might be for telecommuters or mobile users, said Traynor, whereby companies could buy packages of remote access software, local and long-distance voice and data service, laptops, modems, cell phones, and even general help desk services from AT&T.

The company is capitalizing on applications and technology designed on a custom basis for individual large companies by its outsourcing arm, AT&T Solutions. This makes it more affordable than going the AT&T Solutions route or serving as one's own integrator, she said.

But James Tafel, manager of telecommunications at Amway Corp. in Ada, Mich., said AT&T is expensive even for low-level outsourcing. On the other hand, "they've had experience with a lot of companies, so they are able to bring innovative ideas to the table."

All this bundling could "help position the networking manager as a champion of new information technology capabilities, rather than being perceived as a cost center or problem solver," Traynor said.

Added Sue Carley, an AT&T product manager in charge of a banking services portfolio under development, "Users are moving to buying services that make money rather than simply contain it."

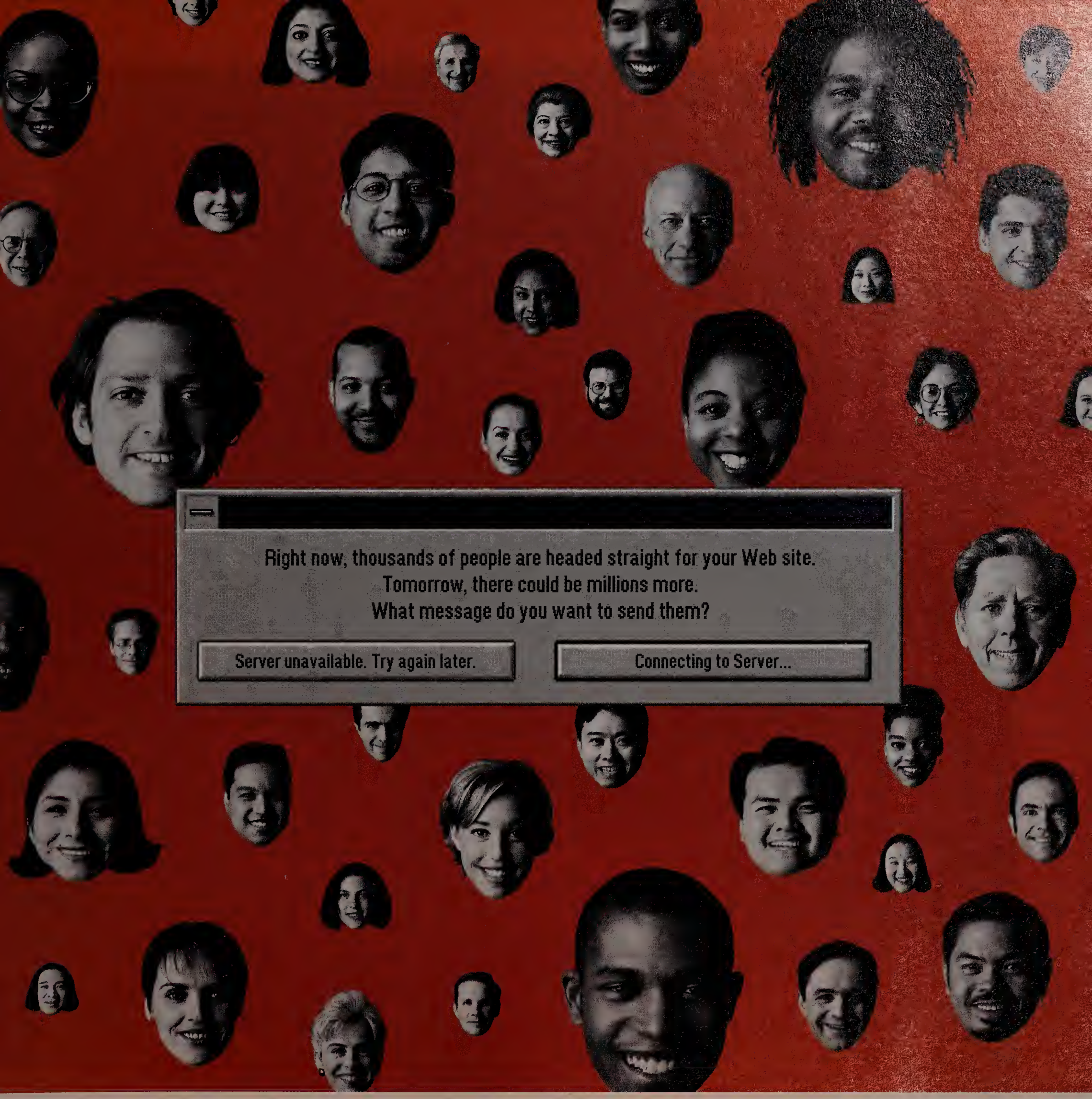
The banking package Carley is developing will likely handle check and credit card verifications, electronic data interchange and payroll functions, she said. Certainly, AT&T will continue bundling transport services for volume discounts, as it always has — and will add local services and wireless as the "battle of the bundle" heats up among end-to-end competitors in the telecommunications reform era.

The most appropriate transport for a set of capabilities is being subtly bundled into the packages; this alleviates some of that decision making from the customer.

This is reflected in an AT&T decision to price Asynchronous Transfer Mode and frame relay services exactly the same.

"The emphasis is on the application, not on the specifics of how traffic gets to its destination," explained Ron Toth, AT&T product manager for AT&T InterSpan ATM services.

Senior Washington Correspondent David Rohde contributed to this story.



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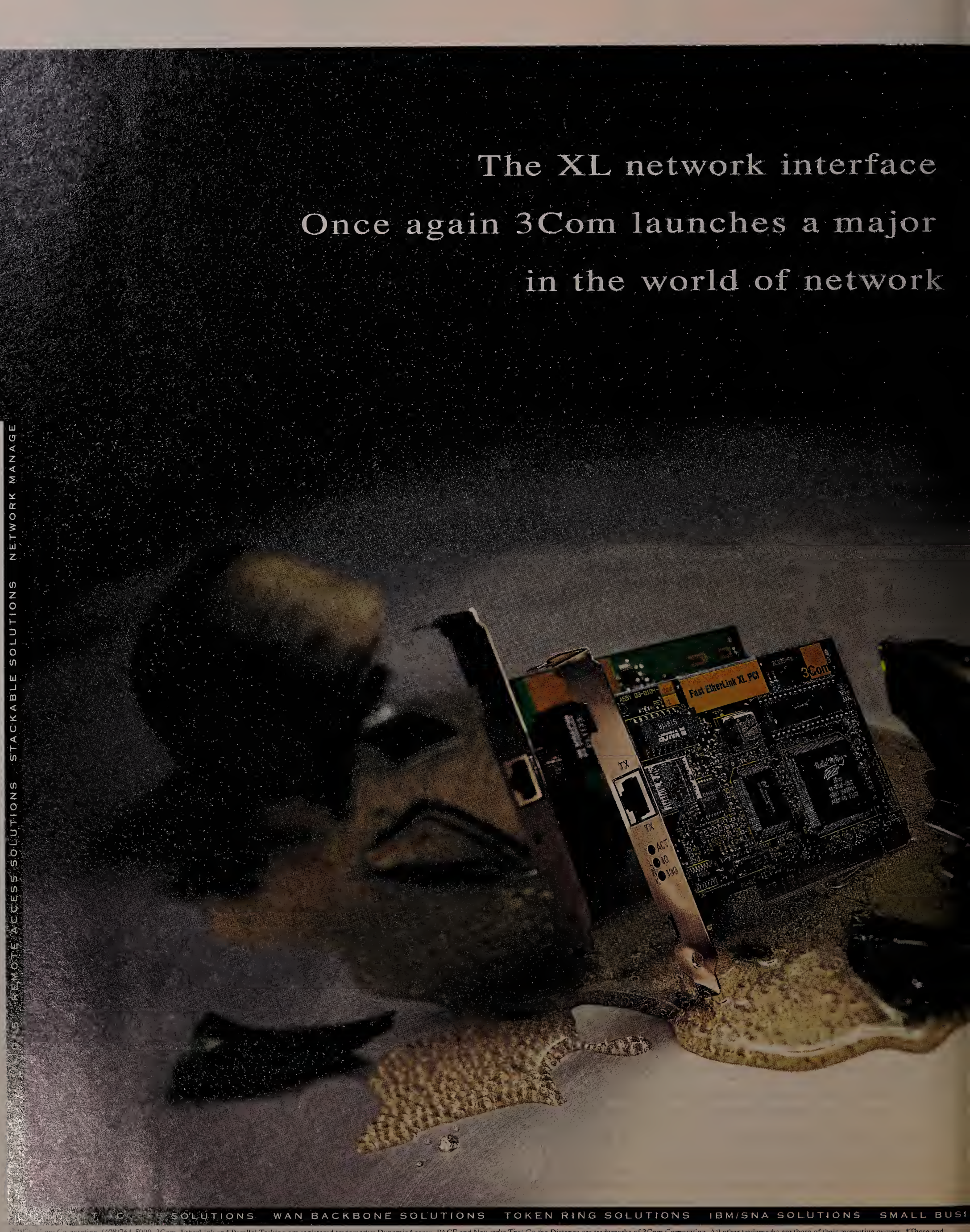

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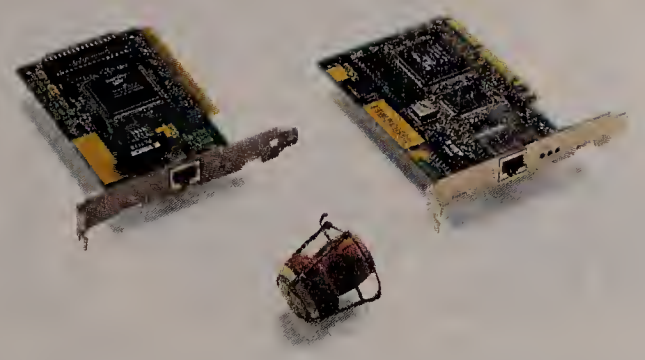

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Web consortium

Continued from page 1

workshops established to steer new technical specs or modify older ones (see graphic), these powerhouses miss nary a W3C get-together. They like to say that they are there to seek the common good of the 'Net. But since no single vendor yet dominates the World-Wide Web, they have no choice. They must work together to survive. It's sink or swim together at Club Web.

Convening in private in cities across the U.S. and Europe, W3C members turn out to ensure that the direction for technologies such as the consortium's Joint Electronic Payments Initiative for electronic wallets dovetails with their own product plans.

No hand-holding here

The W3C meetings have witnessed fierce altercations where proprietary interests clashed behind closed doors. For example, in a bitter fight over security standards, Microsoft pushed for its Private Communications Protocol and Netscape pushed back with its Secure Sockets Layer. Neither won (see related story).

"The Web consortium has taken the position that where [two] manufacturers are wedded to delivering their own technology, it wouldn't endorse either," said Alan Kotok, a Digital engineer and W3C member since its formation two years ago.

One other important thing to know about the W3C: There's scarcely a single voice from the U.S. user community to interrupt the sound of vendors busily hammering out Web specs. European firms are more active, but overall, the group remains a forum for suppliers and not their customers.

The Dutch-based publishing giant Reed Elsevier joined the W3C because it sees a big future in Web publishing, said Herbert Van Zijl, deputy chief at Elsevier's Information Technology Development division and W3C member. According to Van Zijl, it's important for users to get involved to ensure there will be interoperability in a global electronic publishing environment. "Within the constraints of the market forces, the W3C is doing a good job guarding this," he added.

Van Zijl also said he attends every Advisory Committee meeting, in addition to participating in the W3C mathematics working group and another group involving fonts.

Spyglass' *Krauskopf says the consortium plays a key role in the growing market.*

The group's linchpin

But if this system of backroom bargaining has worked to produce open standards — and so far it has — it's probably because of the role played by the Massachusetts Institute of Technology (MIT) Computer Lab as the honest broker for the Web.

MIT Computer Lab Associate Director Albert Vezza founded the consortium with HTML inventor Tim Berners-Lee and the French research firm Institute National de Recherche En Informatique et en Automatique, which shares a transatlantic 64K bit/sec private line with MIT for swapping Web software code being tested.

Vezza said the W3C's unwritten ground rules discourage the membership from trying to graft their proprietary technologies onto the Web. And like tough political bosses, Berners-Lee and Vezza are among the few with the power to keep the network industry giants in line at the W3C.

The vendors largely do the work. For instance, Digital engineer Jim Gettys, dispatched to be a W3C visiting scientist, is in charge of revising HTTP. HP donated its engineer, Dave Raggett, to craft the new HTML 3.2 with tables.

But Berners-Lee, Vezza and other MIT cohorts retain a kind of veto power over what work will bear the official copyright stamp of the W3C.

MIT encourages W3C members to incorporate open specs developed elsewhere, such as the Department of Defense's Continuous Acquistion Lifecycle Support. But Vezza winces when he hears the W3C called a standards body.

"It's not really a standards process," he said, stressing that the W3C is just in the business of producing specs. "At the end of the day, we look for consensus."

Moving faster

Vezza pointed out that the Web Consortium works much faster than standards bodies such as the International Standards Organization and the Internet Engineering Task Force (IETF) because the membership is eager to speed products to market.

The W3C does send completed work to the IETF for approval. But by the time the IETF has signed off on one version of HTML, the W3C has completed an update and W3C members have implemented it in scores of products such as Web browsers and servers.

John Patrick, IBM's vice president of Internet technology and a charter member of the group, said the W3C is the best outlet for debate over Web technologies and described the group as the "center of gravity" for the industry.

"The consortium performs a key function in growing market size," added Tim Krauskopf, vice president of research and development at Spyglass. While the IETF expects the outside world to come up with the energy and invention for the Internet, the W3C "believes the Web is evolving so fast that if it were passive, it would be in jeopardy because of fragmentation," Krauskopf said. "If things get out of control, we can have a meeting and it will be at the W3C."

Trouble ahead

But things may be starting to splinter already due to the pitched battle between Microsoft and Netscape, which are racing each other to bring new features to market. In spite of the W3C's Web standards efforts, the level of interoperability in, for example, the way browsers view Web pages seems to be diminishing, Krauskopf said.

Even small differences, such as whether Web browsers display tables as left-justified or centered de- pending on small variations in the HTML standard, have a negative impact on corporate acceptance of the technology, he added.

It's clear the W3C will only survive if the market for Web-based products remains competitive. If a single company — whether it be Microsoft, Netscape or a dark-horse competitor — wins decisively, the W3C could end up in cobwebs.

In the conclusion of this two-part series, we'll examine whether the W3C can maintain its hold over the direction of Web technologies in the face of growing market pressures. Also, where are all the users? ■

THE WORLD-WIDE WEB CONSORTIUM FOCUSES ON:

- HTML
- HTTP
- Platform for Internet Content Selection (PICS)
- Joint Electronic Payments Initiative (JEPI)
- Portable Network Graphics (PNG)
- Style sheets
- Protocol Extension Protocol (PNP)

When a new or updated consortium specification is complete, the organization's 140 members get details a month before the general public.

Microsoft and Netscape quibble

One of the latest spats in the World-Wide Web Consortium involves Netscape Communications Corp. and Microsoft Corp. and revolves around cascading style sheets, a complex system for defining HTML page layouts.

A Microsoft product manager cried foul earlier this month, claiming Netscape had "gone off and done their own thing" by adding a proprietary HTML tag that was not brought up in any W3C proceeding.

"Microsoft has been chastised in the past [for not] being open, in terms of the Internet in general," said Paul Balle, a product manager for Microsoft's Internet Explorer Web browser. "We are making incredible strides in that area, and for one of the [companies that] originally chastised us to start implementing proprietary tags is an interesting about-face."

Netscape, on the other hand, claimed that was not what was happening at all. The company vowed staunch support for cascading style sheets, but said it made some enhancements in the meantime to meet customer requirements.

"We've introduced a way to create white space in an HTML page," said Netscape's Daniel Klaussen, a product manager for the Navigator Web browser.

The cascading style sheets specification also defines certain elements of spacing — hence Microsoft's complaint. "Microsoft is claiming they have the high moral ground for doing things in an open and standard way," Klaussen said. "It's an interesting irony."

— *Carol Sliwa*

On this evening's fight card . . .

At the moment, attention at the World-Wide Web Consortium is riveted on two emerging specs, one for Web content selection and the other for handling electronic payments over the Internet.

The Joint Electronic Payments Initiative (JEPI) specification will describe an electronic wallet for sending encrypted credit-card information and making micropayments of a few cents to Internet merchants and online services.

Because a number of payment systems already exist, JEPI will describe how to negotiate between proprietary payment technology.

If a vendor is not at the table to ensure that its technology gets attention, it risks being cut out of a standard that could play a vital role in electronic commerce on tomorrow's Internet.

IBM's *Patrick says company to support PICS filtering feature in its product line.*

Another hot ticket is to the workgroup devising the Platform for Internet Content Selection (PICS) specification for user access to Web content through a ratings system. PICS has gotten a lot of attention as a way to keep sexual material away from children on the Internet, but the technology has much wider applications for corporate intranets.

Digital Equipment Corp. plans to integrate PICS into its AltaVista search engine so a PICS server can control the type of material that reaches the user.

John Patrick, IBM's vice president of Internet technology, said his company is also likely to integrate the PICS content filtering features into its product line.

— *Ellen Messmer*

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21. ☐ Other *(please specify)*_____

2 What is your job function? (check one only)

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1. ☐ Networking Management
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3 What is the total number of sites for which you have purchase influence? (check one only)

1. ☐ 100+
2. ☐ 50 - 99
3. ☐ 20 - 49
4. ☐ 10 - 19
5. ☐ 2 - 9
6. ☐ 1
7. ☐ None

4 What is your scope and involvement in purchasing decisions for network products & services for your enterprise?

A. SCOPE (check one only)
1. ☐ Corporate/Enterprise
2. ☐ Department
3. ☐ None

B. INVOLVEMENT (check all that apply)
1. ☐ Recommend/Specify
2. ☐ Approve
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4. ☐ Determine the need
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5 Check ALL that apply in Columns A and B:

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☐ 63.	☐	Groupware
☐ 64.	☐	EDI
☐ 65.	☐	E-mail
☐ 66.	☐	Windows/Graphical User Interface
☐ 67.	☐	Multimedia
☐ 68.	☐	Graphics/DTP
☐ 69.	☐	Remote Access
☐ 70.	☐	Imaging
☐ 71.	☐	Server Suites (Backoffice, etc.)
☐ 72.	☐	Suites
☐ 73.	☐	Middleware
☐ 74.	☐	Document Management
☐ 75.	☐	Database Server
☐ 76.	☐	Site Metering Tools
☐ 77.	☐	Computer-Integrated Telephony (CIT)
❑ 106	❑	**WIDE-AREA NETWORK EQUIPMENT & SERVICES**
☐ 78.	☐	Frame Relay Equip./Services
☐ 79.	☐	Modems
☐ 80.	☐	FT-1/T-1/T-3 Multiplexers
☐ 81.	☐	FT-1/T-1/T-3 Services
☐ 82.	☐	SONET
☐ 83.	☐	Inverse Multiplexers
☐ 84.	☐	SMDS
☐ 85.	☐	Asynchronous Transfer Mode
☐ 86.	☐	Diagnostic/Test Equipment
☐ 87.	☐	DSU/CSU
☐ 88.	☐	VSAT/Satellite
☐ 89.	☐	ISDN Equipment & Services
☐ 90.	☐	PBXs
☐ 91.	☐	Voice Mail/Response
☐ 92.	☐	Videoconferencing
☐ 93.	☐	Leased Lines
☐ 94.	☐	Switched Data
☐ 95.	☐	E-mail
☐ 96.	☐	800/900/MTS Services
☐ 97.	☐	Virtual Networks
☐ 98.	☐	Outsourcing/Systems Integration Services
☐ 99.	☐	Education/Training Services
❑ 107	❑	None of the above (1-99)

BI0796

6 What is the total number of LANs, workstations/nodes at this location/ in your organization?

At this location: LANs		At this location: Workstations/ Nodes	Entire organization: LANs		Entire organization: Workstations/ Nodes
1. ☐	5,000+	☐	1. ☐	5,000+	☐
2. ☐	1,000 - 4,999	☐	2. ☐	1,000 - 4,999	☐
3. ☐	100 - 999	☐	3. ☐	100 - 999	☐
4. ☐	50 - 99	☐	4. ☐	50 - 99	☐
5. ☐	10 - 49	☐	5. ☐	10 - 49	☐
6. ☐	1 - 9	☐	6. ☐	1 - 9	☐

7 Check ALL that apply in Columns A and B:

A. The following network platforms are currently installed:
B. The following network platforms are planned for purchase:

A	B	
❑ 55	❑	**NETWORK PROTOCOLS**
☐ 01.	☐	SNA
☐ 02.	☐	DECnet
☐ 03.	☐	TCP/IP
☐ 04.	☐	Novell IPX/SPX
☐ 05.	☐	APPC/APPN/LU 6.2
☐ 06.	☐	NETBIOS
☐ 07.	☐	AppleTalk
☐ 08.	☐	NFS
☐ 09.	☐	IPv6
☐ 10.	☐	SNMP/SNMPv2
☐ 11.	☐	Other *(please specify)*_____
❑ 56	❑	**NETWORK OPERATING SYSTEM**
☐ 12.	☐	Microsoft (LAN Manager)
☐ 13.	☐	Novell (NetWare 2.X, 3.X)
☐ 14.	☐	Novell (NetWare 4.X)
☐ 15.	☐	Windows NT
☐ 16.	☐	Windows NT/Advanced Server
☐ 17.	☐	LocalTalk (AppleTalk)
☐ 18.	☐	Banyan (VINES)
☐ 19.	☐	IBM (LAN Server)
☐ 20.	☐	IBM (PC LAN Program)
☐ 21.	☐	Artisoft (LANtastic)
☐ 22.	☐	Digital (Pathworks)
☐ 23.	☐	Other *(please specify)*_____
❑ 57	❑	**LAN ENVIRONMENT**
☐ 24.	☐	4M Token Ring
☐ 25.	☐	16M Token Ring
☐ 26.	☐	Ethernet
☐ 27.	☐	Fast Ethernet
☐ 28.	☐	100vg Any LAN
☐ 29.	☐	FDDI
☐ 30.	☐	LocalTalk
☐ 31.	☐	10Base-T
☐ 32.	☐	ATM
☐ 33.	☐	Other *(please specify)*_____
❑ 58	❑	**COMPUTER OPERATING SYSTEM**
☐ 34.	☐	DOS
☐ 35.	☐	Unix/Xenix/AIX
☐ 36.	☐	OS/2
☐ 37.	☐	OS/2 Warp
☐ 38.	☐	IBM MVS
☐ 39.	☐	IBM VM
☐ 40.	☐	Digital VMS
☐ 41.	☐	Macintosh
☐ 42.	☐	Windows
☐ 43.	☐	Windows 95
☐ 44.	☐	NT
☐ 45.	☐	Solaris
☐ 46.	☐	Other *(please specify)*_____
☐ 47.	☐	None of the above (1-46)

8 For which areas outside of North America do you have purchase influence? (check all that apply)

1. ☐ Europe
2. ☐ Asia
3. ☐ South America
4. ☐ Australia
5. ☐ Middle East
6. ☐ None

9 Please indicate your involvement in developing/implementing Internet/ Intranet Technologies: (check all that apply)

1. ☐ Recommend/Specify
2. ☐ Approve
3. ☐ Evaluate
4. ☐ Determine the need
5. ☐ Implement
6. ☐ None

10 Which of the following hardware platforms are installed/planned in your company? (check all that apply)

	Mainframes A – Installed	Mainframes B – Planned		Minis C – Installed	Minis D – Planned
1. IBM	☐	☐	1. IBM	☐	☐
2. Amdahl	☐	☐	2. Digital	☐	☐
3. Cray	☐	☐	3. Tandem	☐	☐
4. Hitachi	☐	☐	4. Unisys	☐	☐
5. Unisys	☐	☐	5. AT&T GIS	☐	☐
			6. HP	☐	☐
			7. Data General	☐	☐

What is the total number of Servers/Clients installed/planned: (USE NUMBERS ONLY)

E-AT THIS LOCATION #		F-% with Internet Access
1. Servers		%
2. Clients		%

G-ENTIRE ORGANIZATION #		H-% with Internet Access
1. Servers		%
2. Clients		%

Which of the following Servers/Clients do you have installed/planned: (CHECK ALL THAT APPLY)

	At this location: I. Servers	At this location: J. Clients	Entire organization: K. Servers	Entire organization: L. Clients
01. Power PC	☐	☐	☐	☐
02. Power Mac	☐	☐	☐	☐
03. Mac Other	☐	☐	☐	☐
04. Multi Processor Servers	☐	☐	☐	☐
05. P6	☐	☐	☐	☐
06. Pentium Pro	☐	☐	☐	☐
07. Pentium	☐	☐	☐	☐
08. 486	☐	☐	☐	☐
09. 386	☐	☐	☐	☐
10. 286	☐	☐	☐	☐
11. Risc	☐	☐	☐	☐
12. Other	☐	☐	☐	☐

11 What is the estimated value of networking equipment and services that you help specify, recommend or approve annually? (check one only)

01. ☐ $100 million or more
02. ☐ $50 million - $99.9 million
03. ☐ $25 million - $49.9 million
04. ☐ $20 million - $24.9 million
05. ☐ $10 million - $19.9 million
06. ☐ $5 million - $9.9 million
07. ☐ $1 million - $4.9 million
08. ☐ $500,000 - $999,999
09. ☐ $250,000 - $499,999
10. ☐ $249,999 or less
11. ☐ None of the above

12 Estimated gross annual revenue of your entire company/institution: (check one only)

1. ☐ $10 billion or more
2. ☐ $1 billion to $9.9 billion
3. ☐ $500 million to $999.9 million
4. ☐ $100 million to $499.9 million
5. ☐ $50 million to $99.9 million
6. ☐ $10 million to $49.9 million
7. ☐ $5 million to $9.9 million
8. ☐ $4.9 million or less
9. ☐ None of the above

13 Estimated number of employees at this location/in entire organization:

At this location:
1. ☐ Over 10,000
2. ☐ 5,000 - 9,999
3. ☐ 2,500 - 4,999
4. ☐ 1,000 - 2,499
5. ☐ 500 - 999
6. ☐ 499 or less

Entire organization:
1. ☐ Over 10,000
2. ☐ 5,000 - 9,999
3. ☐ 2,500 - 4,999
4. ☐ 1,000 - 2,499
5. ☐ 500 - 999
6. ☐ 499 or less

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Briefs

■ **ISDNet, Inc.** *has unveiled an* **integrated hub/router** *for branch office connectivity to corporate nets over ISDN. The NetRouter 1080 combines an eight-port Ethernet hub with an IP and IPX router. It costs $1,895 and is available now.*

ISDNet: (408) 522-5090.

■ **AbhiWeb Corp.** *this week will announce a family of* **secure Internet access servers** *designed for businesses and departments within corporations. AFS 2000 can act as a router, remote access server and firewall server. It supports dial-up, ISDN, frame relay and T-1 links. Available now, AFS 2000 starts at $3,995.*

AbhiWeb: (408) 541-1400.

■ **Digi International, Inc.** *this week will unwrap a PC Card for laptops that lets* **mobile customers** *use either analog or ISDN dial-up connections, and unveil a set of Primary Rate Interface ISDN adapters for network or communications servers.*

The DataFire Go PC Card will be available in September for $625.

The DataFire PRIme ISA cards will come with one or two PRI ports, and can be used as remote access for remote offices, for routing calls among remote locations and by Internet service providers for ISDN customers.

Also available in September, the one-port version will cost $2,995, and the three-port version will be priced at $3,795.

Digi: (612) 912-3444.

■ **IBM** *last week announced a new Network Recovery Service (NRS) designed to* **protect and recover** *users' high-speed nets. NRS will be offered in 50 cities throughout the U.S., and will provide hot data center, communication line and network backup facilities. The service will deploy a Synchronous Optical Network (SONET)-based backbone to handle high-volume networks.*

IBM: (800) 599-9950.

Fraudulent cellular users are popping up worldwide

Cell crimes are still escalating despite stiffer penalties.

By Joanie Wexler
San Francisco

The U.S. is having some success in the crackdown on cellular thieves, but overseas, it is another story. The international arena looms as the next frontier for fraud, said experts at a recent technology conference here.

Last month, two felons were ordered by a Los Angeles Superior Court to pay the largest restitution in history to a carrier for cellular fraud. Vage Patatanyan and David Younesi owe AirTouch Cellular more than $560,000 for calls made by phones they illegally programmed with legitimate customers' phone numbers.

The Cellular Telecommunications Industry Association (CTIA) hailed the sentence as another example of stiffer U.S. penalties finally beginning to deter criminals. But the CTIA estimates that the U.S. alone still loses $1.7 million each day to cellular thieves. These huge sums become carrier overhead that eventually flows through to user bills.

But panelists at the TEK-21 conference earlier this month, hosted by Cincinnati Bell Information Systems, said that phone-cloning operations larger than anything seen in the U.S. are in full swing in off-shore locations — places where U.S.-based multinationals are setting up shop and buying cellular service. Foreign governments have just not been aggressive in bringing criminals to justice, they said, and the panelists urged carriers here to trade education and fraud-prevention technologies with overseas phone companies.

The price of phone cloning

Despite stiffer U.S. penalties for cellular fraud, stealing wireless phone calls is still big business.

Year	Worldwide fraud losses	Fraud losses as % of cellular revenue
1992	$200 million	2%
1996	$650 million	4%

Michael Guidry, chairman of The Guidry Group, Inc., an investigative firm in The Woodlands, Texas, said he recently went undercover to a plant in Taipei, China. He said he was astounded to see an entire operation de-voted to building cell phones that get illegally programmed by a paid engineering staff and then sold on the black market.

Johnson said that, aside from phone cloning, wireless hijacking is going on in Latin America. "A super-strong transmitter picks up your signal, puts it on hold for a moment, then makes a three-way call," he explained.

The U.S. has made great strides in combating cellular fraud. The Los Angeles decision, for example, follows legislation signed in May in Maryland that clearly makes it a crime to possess, use or distribute a cloned telephone. The law is to take effect Oct. 1.

Lee Kaywork, CTIA vice president of toll-fraud prevention, acknowledged, though, that "fraud prevention has been at the expense of user convenience."

Users often must employ personal identification numbers to authenticate themselves. In addition they frequently find their roaming capabilities shut off and are asked instead to use calling cards.

Still others must deal with paranoid carriers.

One cell phone user complained on the Internet last week, for example, that AT&T Wireless Services immediately shut off his service when he made a call to Jamaica from the U.S. because the carrier suspected fraud.

He requested that AT&T allow him to pre-authorize certain area codes he could call without hassle, but the company refused. ■

Cisco unveils ATM inverse mux for StrataCom BPX

By Jim Duffy
San Jose, Calif.

Cisco Systems, Inc. last week announced a product for its ATM switches that enables users to exceed the bandwidth limitations of T-1 and E-1 circuits without upgrading to costly T-3 pipes.

Called Inverse Multiplexing for ATM (IMA), the product is a module for Cisco's StrataCom BPX/Axis Asynchronous Transfer Mode WAN switch. It allows users to aggregate as many as eight T-1/E-1 circuits into a single logical ATM link for high-speed access and trunking applications.

Without the IMA module, users that need speeds beyond 1.5M or 2M bit/sec would be faced with bringing up expensive T-3/E-3 circuits, Cisco contended. These lines can cost up to eight times as much as T-1 spans. What makes them even more im-practical is excessive bandwidth: Though they need greater than 2M bit/sec, users may not need all of the 45M bit/sec of a T-3.

"If you're running T-1 and you need a little bit more bandwidth, you don't have to make the cost jump to T-3," said John Coons, an analyst with Dataquest, Inc., located here. "T-3 in the U.S. is only generally available in major metropolitan areas. T-1 is much more widely available and much faster to provision." Outside the U.S., it is difficult for users to access E-3 facilities, Coons added. "There's just a handful of private E-3 lines in use," he said.

Properties of IMA

An inverse muxing technique that:

- Aggregates several T-1/E-1 ATM links into a single high-speed ATM trunk
- Makes several T-1s appear as a single physical ATM link
- Supports wide range of link speeds
- Will be an ATM Forum standard

SOURCE: CISCO, SAN JOSE, CALIF.

Given that scenario, the IMA module lets users aggregate NxT-1/E-1 ATM links into a 12M or 16M bit/sec user-to-ATM network access line, or an ATM interswitch trunk. The IMA pipe appears as a single physical ATM link but is in fact a logical link comprising multiple T-1s and E-1s. At the source end of the transmission, a single stream of cells is transmitted across multiple physical links for load balancing and redundancy. These links are then multiplexed back into the single high-speed circuit at the destination node, and the cells are resequenced in the correct order via control cells.

IMA can be used to transport bandwidth-intensive multimedia applications, and extend LAN and ATM workgroups over a WAN. IMA specifications are currently being defined by the ATM Forum. Though Cisco's module is a prestandard implementation, users can upgrade to a standard-compliant version via a software change, the company said.

Cisco will add an IMA module to its IGX enterprise WAN switch later this year or early next, and will also add it to its routers and switches where appropriate.

IMA costs $18,000 and is available now.

Separately, Cisco confirmed that it is winding down development on its LightStream 2020 ATM switch. The future of the LightStream 2020 was cast into doubt earlier this year when Cisco bought StrataCom, Inc., despite Cisco's insistence that there was no overlap between the StrataCom and LightStream product lines (*NW,* April 29, page 7). The LightStream 2020 will be succeeded by the StrataCom IGX. Product upgrade and trade-in policies will be implemented on an individual customer basis, said Richard Palmer, director of marketing for high-end routing products in Cisco's Core business unit.

©Cisco: (408) 526-4000.

INTERNETWORKING MONITOR

Scott Bradner

It can't be dead, it hurts too much

It's dueling columnists time. Bob Metcalfe mentioned me recently, so I guess it's only fair to mention him in mine.

I showed up in an *InfoWorld* piece as part of some vague (and somewhat sinister and, at the same time, out of it) "intelligentsia" that would deny the truth about the state of the Internet.

I expect he is reacting to my column of a few weeks ago, "A very lively death indeed" (*NW*, June 24, page 23), wherein I said that the Internet was not a "thing" that can collapse — along the same lines that the interstate highway system is not a "thing" that can collapse.

Bob accuses this intelligentsia of all sorts of evil things, but mostly of blindly thinking the Internet is somehow perfect despite the lack of security, quality of service (QoS) guarantees and management or billing systems. (The way he uses the term "intelligentsia" makes us seem like some sort of slime. I will say that, if I'm going to be slime, I'd rather be slime in the same bucket with MIT's Dave Clark than with some other people I could mention.)

I think Bob is engaging in more than a little bit of hyperbole. The first column that I saw in the "Internet is about to die" series was published surrounded by an ad headline that read "Got any hot buttons you would like pushed?"

I think Bob is doing a bit of button pushing. He has succeeded in getting a number of the current operators of the Internet service providers (ISP) more than a bit hot under the collar. I think he has some valid points, but it does take a bit of holding of one's nose to dig in and find them.

I maintain that the Internet is a collection of networks, i.e., the classical definition. These networks range in scale from the local Ethernet LAN in my building at Harvard to the OC-3 (soon to be OC-12) backbones of some of the major providers.

Their operators range in business acumen from high-school students running a local ISP out of their basement on, at best, a shoestring and little to no technical expertise, to some of the big boys with very big budgets and dozens of people with years of experience running large data networks.

Some of these networks, the constituent parts of the Internet, are truly awful. They are woefully undercapitalized and pitifully short of technical ability (but often long on hyperbole). I've seen packet losses as high as 95% in some cases by several of these "providers." But to me, that is a bad component — not a collapsed system. The 'Net is not dead, but it sure hurts to try and use some of it.

I expect that there will be a rather difficult shakeout within the ranks of ISPs in the next few years. Customers will learn that hyperbole does not move bits. But I also expect that the Internet will continue to be made up of parts, not all wholly good. This will mean that with the Internet, as it does with most services, quality will continue to depend on who you buy from.

By the way, Bob, if you actually think that parts of the intelligentsia (like Dave and I) don't know that parts of the net suck (to use the technical term) or that improved security and QoS technology are needed, you have not been following what we are doing to get just that sort of thing defined, implemented and deployed.

Disclaimer: No part of Harvard sucks (or so I must say), but the above rebuttal is only from me.

Bradner is a consultant with Harvard University's Office of Information Technology. He can be reached via the Internet at sob@harvard.edu.

Carrier Services

Covering: Local and Long-Distance Services • Value-Added Networks • Cable, Satellite and Wireless Networks • Regulatory Affairs • Carrier-Based Internet Services

Briefs

■ **Ameritech Corp.** *and* **Time Warner Communications** *have agreed to the terms under which they will connect their networks, enabling Time Warner to offer* **local telephone service** *in Ohio, Wisconsin and Indiana. The deal covers a two-year period, which starts after the first call by a Time Warner customer is made in each state.*

The agreement still must be approved by each state's public utilities commission.

■ *Japanese carrier* **Nippon Telegraph and Telephone (NTT)** *will launch its* **Lotus Notes Public Networks** *service on Aug. 1. Like other carriers with Notes offerings, such as British Telecommunications plc, CompuServe, Inc. and US WEST, Inc., NTT will host and maintain Notes servers in its network for customers as an outsourced service and will link those servers to the World-Wide Web. The carrier has also launched a Novell, Inc. NetWare remote access service.*

■ **America's SAP Users Group (ASUG)** *has chosen CompuServe's Notes service, Enterprise Connect for Lotus Notes, to host ASUG* **discussion databases** *and five other databases for technical support. SAP AG is a global provider of client/server business applications and the fifth largest independent software supplier in the world.*

■ *Internet service provider* **Durand Communications Network, Inc.** *in Santa Barbara, Calif., will host NetSpeak Corp.'s WebPhone* **telephony software** *on its servers. The move will enable the ISP to offer business phone services, including private branch exchanges, automatic call distribution and voice mail, over the 'Net.*

*NetSpeak announced its business products last month (*NW, *June 17, page 21), and Durand is the first ISP to sign up to offer value-added services using them.*

How to pick your global 800 number

New standard puts eight digits after 800, and the best choice may not be the obvious one.

By David Rohde

Just because Americans invented and perfected mass marketing using 800 telephone numbers doesn't mean some U.S. businesses won't make stupid mistakes when the 800 code goes global next February.

The International Telecommunication Union (ITU) presented U.S. companies with a tempting opportunity when it recently established the new E.169 standard for global toll-free numbers.

He who hesitates is . . . smart?

Three reasons to think twice before choosing an alphanumeric vanity Universal International Freephone Number:

1. Many foreign telephones have only numbers, not letters, on the keypads.
2. In some countries, the letter pattern is reversed from the North American standard, with ABC appearing on the 9 key, DEF on the 8 key, and so on.
3. Many English terms found in vanity numbers, such as MATTRESS, FLOWERS and THE CARD, are meaningless in other languages.

Although the new standard is 800 plus eight digits, the ITU ruled that U.S. companies could take their existing seven-digit alphanumeric vanity numbers and add a single digit before or after it to create the new Universal International Freephone Number, or UIFN (*NW,* July 15, page 23).

But that does not mean embedding popular North American 800 vanity numbers is the best approach for everyone. AT&T officials point out that U.S. companies often forget the obvious — that not everyone on the planet understands English. And there are other problems with using words as part of telephone numbers (see graphic).

"The European carriers kind of chuckle when we talk about the importance of embedding [vanity numbers into UIFNs] because they don't see the significance," said Brian Hernandez, AT&T's global offer manager for emerging services.

For many companies, embedding a vanity number within a UIFN makes good sense. This includes companies that chose their company names rather than generic product words for their vanity numbers, though only if the name is used consistently around the world.

In especially good position are companies and organizations whose products are deliberately named to be rendered and pronounced identically in all languages that use the Roman alphabet.

Observers pointed immediately to Visa International, Inc., which could apply for a UIFN such as (800) VISA-2000 and gain tremendous global recognition right off the bat. In fact, the 2000 tag signifying the impending new century is expected to be a popular choice for UIFNs since the eight-digit UIFN format breaks neatly into two four-digit segments.

But after years of disputes over both domestic 800 numbers and Internet domain names, users may assume they have to rush to apply for a unique UIFN. Not so, said AT&T officials and John Tar, the new UIFN registrar in Geneva. They noted that all UIFN applications received between Dec. 3, 1996 — when the application process begins – and Feb. 1, 1997, will be treated as if they were received at the same time.

Disputes will be settled by a tiebreaking process that ends in a coin flip.

To obtain a UIFN number, users must deal with one of the four biggest U.S. interexchange carriers — AT&T, MCI Communications Corp., Sprint Corp. or LDDS WorldCom. Only those four are recognized by the ITU as Responsible Operating Agencies for purposes of registering UIFNs. ■

Local carriers finalize 'Net plans; GTE and UUNET first to align

By Tim Greene and Joanie Wexler

If your local exchange carrier isn't in the Internet access business, just wait a minute.

The big local carriers that aren't already Internet service providers (ISP) are making their final preparations to enter that lucrative market. That includes SBC Communications Corp. and BellSouth Corp., which will be announcing services later this summer, and NYNEX Corp., which plans Internet services by the end of the year.

Making the 'Net accessible

Here's how the major LECs stand on offering Internet access.

LEC	Service	Where
Ameritech	Dedicated frame relay and SMDS only	In region
Bell Atlantic	Dial-up, ISDN, frame relay, SMDS, dedicated DS-) and DS-1	Deploying in major cities in region
BellSouth	Coming late summer	Major markets
NYNEX	Coming by year-end	Major markets first
Pacific Bell	Dial-up, ISDN, dedicated 56K to 45M bit/sec	California
SBC	Coming by year-end	In region, possibly beyond
US WEST	Dial-up and dedicated, hardware packages for businesses	Deploying in major cities in region, some out of region

SBC and BellSouth have been beaten to the punch by GTE, which got into the ISP act last week by teaming with UUNET Technologies, Inc. to offer nationwide access.

Although the NYNEX, SBC and BellSouth offerings will be regional in nature, GTE will resell UUNET's service across the country, taking advantage of the ISP's established national presence.

The resale arrangement is unique among the top-tier local exchange carriers (LEC). Ameritech Corp., Bell Atlantic Corp., Pacific Bell and US WEST, the four regional Bell operating companies that have already started rolling out Internet access services, are basing them on their own networks.

GTE had started to build its own ISP infrastructure in three markets but decided it had to move faster to meet growing user demand, said Gary Avery, GTE's director of marketing and sales for its Internet service.

GTE also learned a lesson from AT&T, which stumbled earlier this year when trying to roll out an Internet access service that met with staggering demand. With UUNET's support, and help desks beefed up by new hires and partnerships with other ISPs, GTE hopes to avoid the problems and bad publicity AT&T endured.

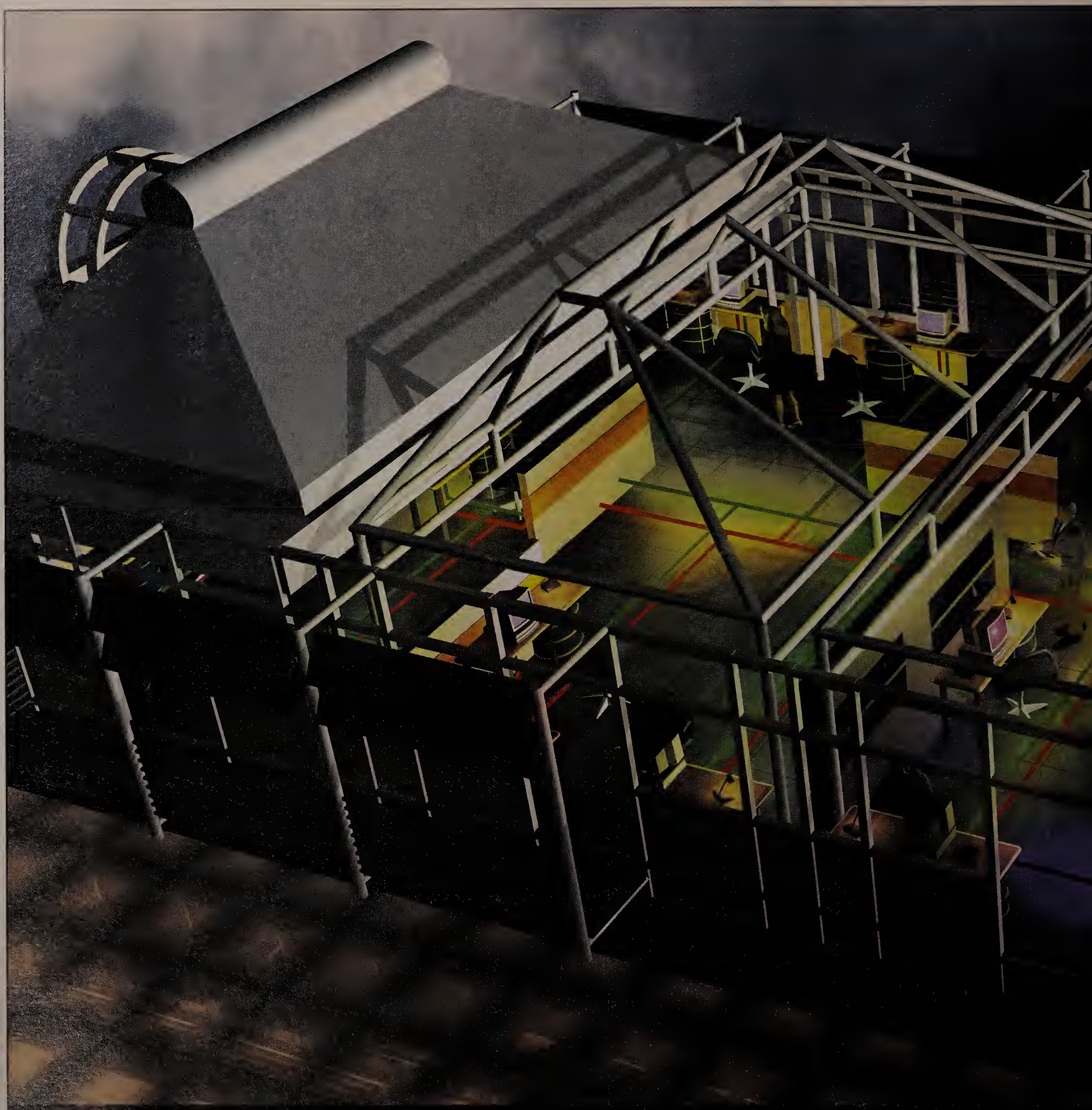
In addition to offering the convenience of a single bill for both Internet and phone service, GTE plans to attract more users by wrapping up packages of Internet access with offerings such as long distance and credit card services and hardware, including routers.

That's akin to the strategies of PacBell and US WEST, both of which offer packages of hardware, transport and Internet access tailored for business users.

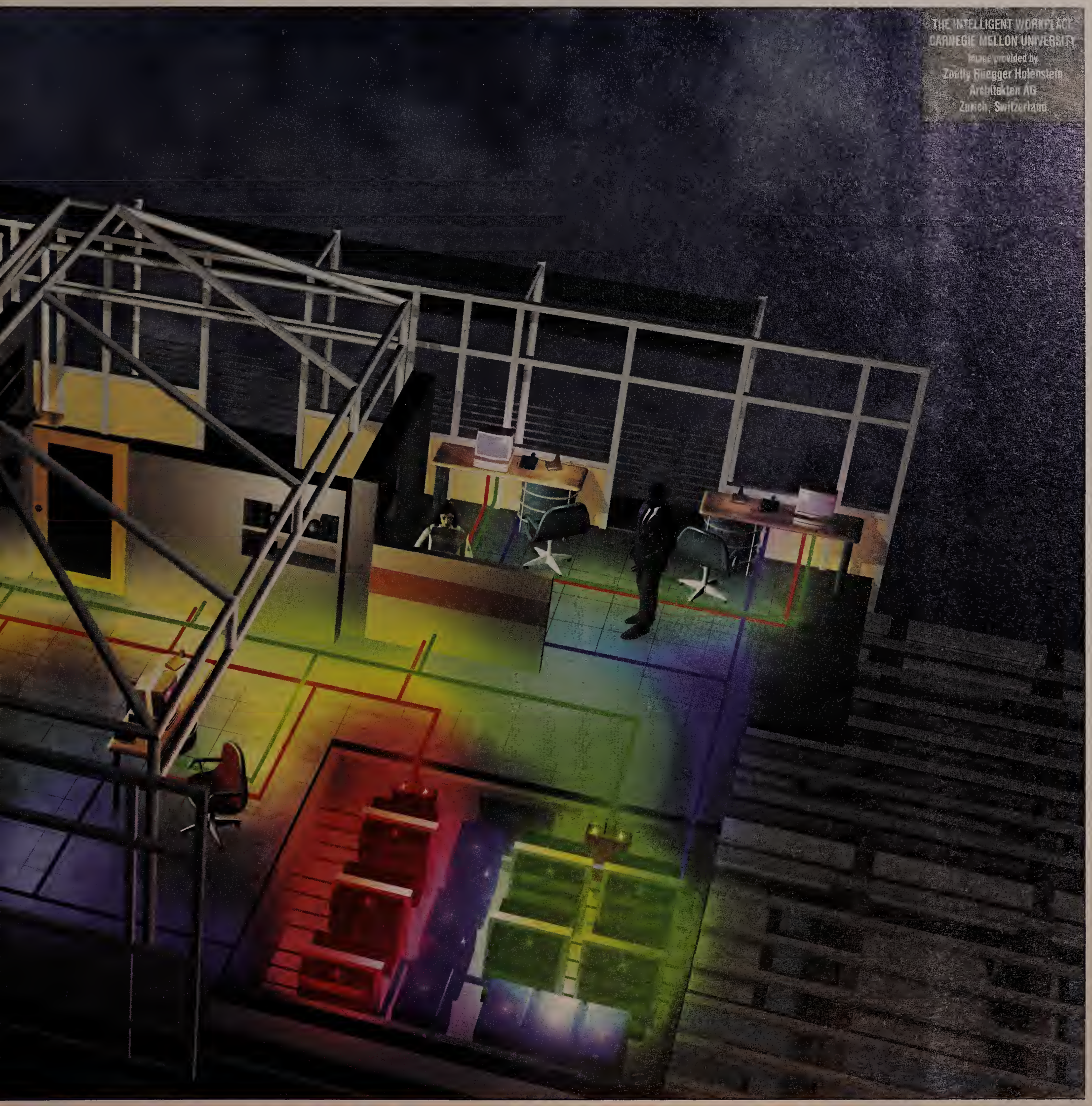
GTE's offerings include dial up, both analog and ISDN Basic and Primary Rate Interface, and dedicated access at DS-1 and DS-3. Frame relay access is also available at 56K, 128K, 256K, 384K and 512K bit/sec. GTE says it plans to market the service first to users within its phone service area and expand later.

The cost of provisioning the service, and, therefore, the cost to end users, could be affected by the rural and suburban nature of GTE's business, one analyst said.

GTE would have to pay for 800 numbers that users would dial in on to reach UUNET points of presence in major cities. That could boost the cost to end users, according to Eric Paulak, research analyst at Gartner Group, Inc., a consulting firm in Stamford, Conn. ■



We're solving networking problems
you don't even know you have yet.



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Circle Reader Service #**32**

"Running OS/2 Warp Server on a network is like feeding it steroids.

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Network

Josh Airall always keeps his antenna up for new ways to enhance his network. His job as Systems Analyst for Cincinnati Bell Information Systems demands it.

So, leaving no stone unturned, Josh figured he'd take a look at OS/2® Warp Server – and that's when things really started to hum.

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LAN World

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Hubs • Switches • Adapters and other equipment

Briefs

■ *The Mountain View, Calif.-based* **NEC Technologies, Inc.** *announced availability of its* **Pentium Pro-powered scalable server,** *the ProServa SH, which is certified to run either Windows NT or NetWare.*

Pricing for the ProServa SH begins at $11,845 for a 200-MHz system with 256K bytes of cache memory, and $13,613 for a 166-MHz system with 512K bytes of cache.

NEC: (800) 632-4636.

■ **Optical Data Systems, Inc. (ODS)** *last week announced a* **Remote Monitoring 2** *management tool that provides statistics on network and application layer traffic.*

LanVision, which works in conjunction with Simple Network Management Protocol management modules located in an ODS switching hub chassis, provides net managers with detailed traffic pattern information to ensure that users and net resources are placed in the correct network location to optimize performance. LanVision is available now for $1,000.

ODS: (214) 234-6400.

■ **Novell, Inc.** *last week quantified industry support for its* **Novell Embedded Systems Technology (NEST)** *by announcing that it is working with more than 200 OEMs to build NEST-enabled copiers, fax machines, printers and scanners. Novell expects more than one million of these devices to be in use by the end of the year.*

NEST is Novell's technology for tying any intelligent device into distributed NetWare networks, which comprise integrated support for IPX/SPX protocols and Novell Directory Services.

Novell: (800) 453-1267.

Hitachi makes move into LAN switching mart

Vendor glides into cluttered market by rolling out Ethernet/Fast Ethernet switches with high-end features, low price tag.

By Jodi Cohen
Santa Clara, Calif.

Hitachi Computer Products America, Inc. last week made its move into the crowded LAN workgroup switching market when it announced its first line of Fast Ethernet devices.

Hitachi's HiSpeed switches

Product	Description	Pricing
HiSpeed 150-10/16	12-port Ethernet switch with four switched 100M bit/sec ports	$7,595
HiSpeed 150-10/32	24-port Ethernet switch with eight switched 100M bit/sec ports	$13,570
HiSpeed 150-100/8	Eight-port 10M/100M bit/sec autosensing switch	$7,795
HiSpeed 150-100/16	16-port 10M/100M bit/sec autosensing switch	$12,785

All products will be available in September.

Fortunately for Hitachi, analysts said, the company's Ethernet/Fast Ethernet switches stand out among its competitors' devices.

Unlike most workgroup switches — such as 3Com Corp.'s LinkSwitch — which typically offer one or two 100M bit/sec ports, the new Hitachi HiSpeed 150 switch family provides up to 32 Ethernet connections and as many as 16 Fast Ethernet links.

Having a high number of fat pipes allows the switch to be used for connecting desktops to multiple servers, to serve as a backbone alternative to Asynchronous Transfer Mode or FDDI, and to provide high-speed links to power users, according to Felix McNulty, director of marketing and sales at Hitachi.

"Companies used to have many desktops connected to one central server," he said. "But now organizations have critical data residing on server farms, so they'll want more than just one or two Fast Ethernet pipes."

Another feature that differentiates Hitachi's HiSpeed 150 switches is a built-in PCI bus that supports a mix of FDDI and ATM LAN interfaces as well as T-1, frame relay and ISDN WAN uplinks.

The WAN support — a unique feature for workgroup devices — will allow workgroup switches to reside in branch offices or other remote sites, McNulty said. The PCI bus also allows the switch to support future technologies such as 622M bit/sec ATM and Gigabit Ethernet.

The HiSpeed 150 family is also jam-packed with advanced software features usually found in backbone switches, industry observers said. For example, the switches support as many as 32 virtual LANs, and provide Remote Monitoring, as well as IP and IPX routing capabilities. The devices also support LAN emulation for ATM uplinks.

And all these high-end features do not add up to a high price tag, according to Esmerelda Silva, an analyst at market research firm International Data Corp. (IDC) in Framingham, Mass. (see graphic).

"This is a low-cost device for the number of 10/100M bit/sec switchable ports you get on the workgroup-level switch," she said. "Certainly, the price points are aggressive compared to similar products on the market, especially for the 16-port 10/100M bit/sec switch."

Silva pointed out that Hitachi can also leverage the sales force of the other Hitachi business units to better compete in the internetworking market. Hitachi has the deep pockets to be able to set up appropriate channels in the U.S. markets, she added.

With more than 40 vendors already competing in the workgroup switching mart, Hitachi will have its work cut out for it. But the market outlook is so strong that there should be enough to go around for everyone, analysts said.

In fact, the worldwide Fast Ethernet switching market is expected to grow from 200,000 ports shipped this year to 1.2 million ports in 1998, according to IDC.

& Hitachi: (408) 986-9770.

Storage management

Buying binge brings Cheyenne backup, telephony tools

By Ben Heskett
Roslyn Heights, N.Y.

Cheyenne Software, Inc. went on a summer shopping spree last week, snapping up new file backup and voice mail software technology.

Cheyenne acquired Intelligent Quotient International, Ltd. (IQI), a Somerset, England-based firm. IQI specializes in technology that lets administrators back up open files and complete partial backups of only atered parts of files.

Cheyenne also bought Mediatrends, Inc., a Concord, Mass.-based computer-telephone integration software developer.

Shopping Spree

What Cheyenne gets from its acquisitions:

IQI

Ability to back up files while they are open and back up only the revised components of a file.

Mediatrends

Voice mail software for Windows 95 and Windows NT.

IQI's technology will be incorporated into ARCserve, Cheyenne's backup product, by year-end, according to company officials. ARCserve dominates the Novell, Inc. NetWare LAN backup market.

During the backup process, ARCserve currently skips files that are open and returns to them later for backup.

In addition to backing up open files, IQI's technology also gives Cheyenne a generic way to back up files across applications. The technology extends Cheyenne's previous strategy of offering application agents for popular databases and messaging products on top of the base ARCserve platform for NetWare and Windows NT.

"With this technology, it becomes much more practical to back up your desktop, to back it up over the network, and to do it from a centralized point of view," said Glenn Reyer, Cheyenne's director of corporate marketing. Reyer said many customers have given up trying to manage desktop backups, but the technology IQI offers will now make that process easier.

Analysts said Cheyenne's IQI acquisition adds important functionality to its ARCserve product and could be adapted for uses in other offerings, such as real-time scanning with its antivirus product InocuLAN. "I think they have quite an asset here," said Bob Abraham, vice president of Freeman Associates, a Santa Barbara, Calif.-based consultancy.

Abraham said IQI was "before their time" when it introduced its backup technology, which it has promoted for several years and licensed to companies such as St. Bernard Software, Inc.

Cheyenne plans to incorporate Mediatrends' Quip voice mail software with its own Faxserve network fax offering, according to company officials. ■

WIRED WINDOWS

It's time to get that intranet project under way

A recent Delphi Consulting Group survey of 400 large companies confirms what most of us assume: Intranets are hot. About 90% of respondents indicated that they were using or evaluating an intranet. If you haven't implemented or at least started planning your intranet, you'd best get going.

"But," you say, "I don't feel comfortable with HTML. Even the so-called easy-to-use HTML design packages like Microsoft Corp.'s FrontPage produce real junk in my hands."

Dave Kearns

Fortunately, there is a solution that requires no more knowledge than the ability to choose a printer from within an application.

Portable documents were just beginning to catch on when the World-Wide Web and HTML stormed onto the scene. Adobe Systems, Inc., whose PostScript print description language was pre-eminent in printing, had created Acrobat, followed by Envoy (now owned by Novell, Inc.) and Common Ground (now owned by Hummingbird Communications, Ltd.).

All three portable document products have Windows and Macintosh versions, while Acrobat and Common Ground also support SunOS/Solaris. Acrobat further supports the HP-UX and AIX.

The three work in a similar way. Each installs as a printer driver so that any application allowing you to select a printer can choose the portable document printer.

The output is a screen image of the document, which looks identical to the hard-copy printed document; all colors, images, tables and charts are available. Acrobat and Envoy also allow you to create jumps within a document — similar to Web browser links — which let you click text or a graphic and move directly to another part of the document.

All three come with freely distributable viewers, as well. If you can use a word processor, spreadsheet, presentation package or any other application, you can use these products to create portable documents. Store the documents on your network and distribute the viewers, and you've got the beginnings of your company intranet.

If you've already installed Netscape Communications Corp.'s Internet browser at all, there is an Acrobat plug-in available that lets end users view Acrobat files within the browser.

If you've installed any browser at all for your users and are willing to limit your document production to a Windows 95 environment, the unsupported PowerToys add-on from Microsoft includes an HTML driver, which installs as a Windows 95 printer driver. Choosing this printer generates HTML pages from your applications ready for viewing from any browser.

With any of these products, you can at least begin your intranet. You won't have anything of an interactive nature, but most company intranets are designed for static documents published quickly for as wide an internal audience as possible.

If you have Internet access, you can get more information and try some of these products for only the cost of download time. Here are the products and relevant URLs:

- Acrobat (http://www.adobe.com)
- Envoy (http://www.novell.com)
- Common Ground (http://www.commonground.com)
- Microsoft HTML Driver (http://www.microsoft.com/windows/software/powertoy.htm).

Kearns, a former network administrator, is a freelance writer and consultant in Austin, Texas. Contact him at dkearns@msn.com.

Tip of the week

If you're running Windows NT Server and want to experiment with a full-blown intranet Web server, download Microsoft's Internet Information Server and try it out. The URL is http://www.microsoft.com/Infoserv/IISInfo.htm.

NET RESULTS

Routers aren't dead — they're actually getting bigger

Even though the switching bigots have declared the death of routing for at least the past two years, and flat-earth network designs reigned supreme for at least 10 minutes, routers just won't go away. Routing software has been ported to almost everything, including edge switches, servers and pocket-size hardware for all your home routing needs.

Still, one would have thought that the possibility of another round of bigger, better, faster and heavier routers would be nil. What would be the use? Large-scale HVAC devices for data centers? Rack fillers? Subnetting at the desktop?

Well, ladies and gentlemen, there is a use and, as a result, a new line of bigger, better, faster and heavier switching routers have started to appear on the horizon, and they will continue through most of next year. As networks have gotten larger, and switching has taken over from the bridging of yesteryear, new routing platforms are being developed that use incredibly high-performance switch matrices, along with routing hardware and software, to build the Godzilla Router of the Internetworking World. We are not just talking about edge device-level products, or even Asynchronous Transfer Mode backbone switch-level capacity, but a range of 16G to 60G bit/sec of capacity and a chassis that can be as large as a cage for a Rottweiler. Sound good so far?

Skip MacAskill and Melinda Le Baron

These switching routers will have the capability to aggregate a greater number of high-speed interfaces such as OC-3 or OC-12 ATM, and some will support more traditional LAN interfaces, such as Fast Ethernet and FDDI. There are even those storage interfaces like Fibre Channel, along with supercomputer interfaces such as High Performance Parallel Interface, that will be supported in case you have a spare Cray lying around.

IP routing is currently the only protocol supported through these systems, which works well for the Internet and networks where managers have actually been able to get down to a single protocol (which may leave the rest of us out).

The vendors involved in this area are ones that you wouldn't expect. Due to the scaled-down requirements of a single protocol (IP routing code is easy to get) and the ubiquitous nature of switching technology, they can create products even though none of them are current router market players. NetStar was the first company to deliver a gigabit speed router, but will be followed by the likes of BBN, DEC, IBM and others that do not currently have any leading routing products.

So who will need these monster routers? Web server farms, video production houses, Internet service providers, super computer centers, cable companies, telephone companies, and only those very large networks that are measured in tens of thousands of nodes. We asked for a demonstration unit, but found our floor would have to be reinforced to support the weight. Guess we'll stick with our personal routers instead.

MacAskill is a senior research analyst and Le Baron is a research director in Gartner Group, Inc.'s Network Computing Infrastructure group. They can be reached at (203) 316-1111 or at inquiry@gartner.com.

BusinessBriefs

Sequent Computer Systems, Inc. recently announced its intent to acquire the server business unit of Eau Claire, Wis.-based **Chen Systems Corp.** Steve Chen, the former chief executive officer of Chen Systems, will become the chief technology officer at Sequent.

The acquisition of Chen Systems will add low-end server offerings to Sequent's strength in the mid-range and high-end server market. Financial terms were not disclosed.

Chen *to move to Sequent as CTO after company acquires Chen Systems.*

Recently, **nSTOR Corp., Inc.** announced it will purchase **Seagate Storage Systems Group** from Seagate Technology, Inc. The Seagate subsidiary was previously known as Connor Storage Systems Group. The acquisition gives nSTOR high-capacity storage products to augment its current line. Financial terms were not disclosed.

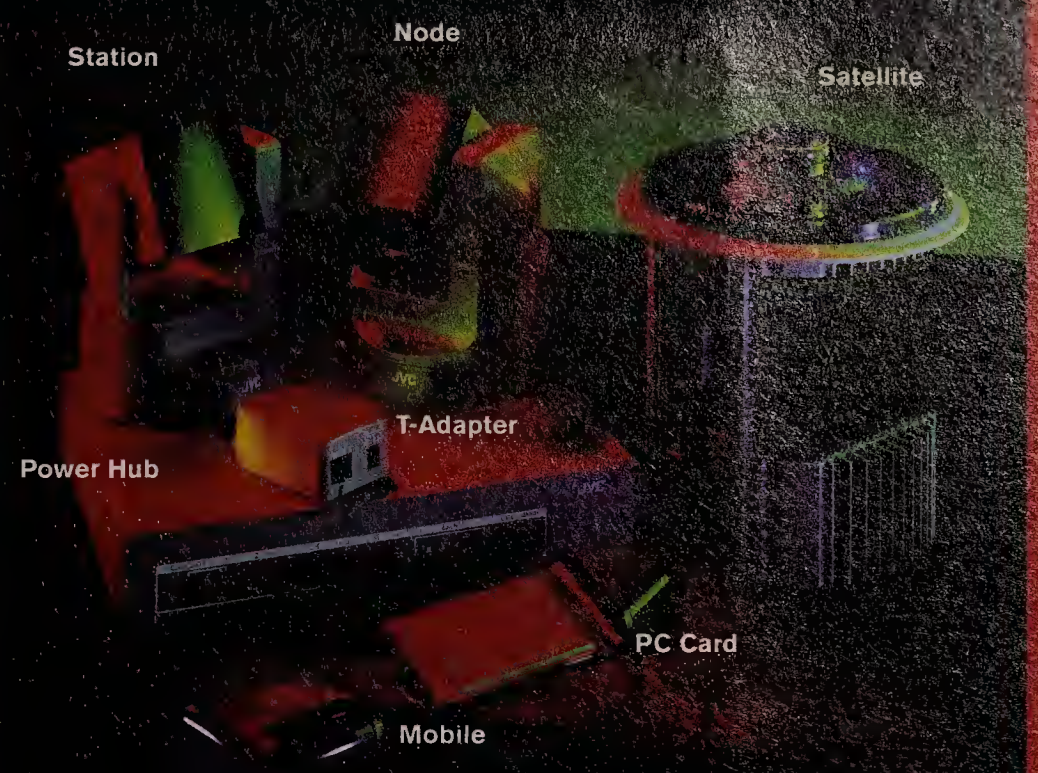
Xylan Corp. last week announced it has expanded its senior management ranks, naming Gary Kunis vice president of business development, Gil Greenbaum vice president of engineering and Philip Lichtenberger vice president of operations.

Kunis, who joined Xylan this month, previously held management positions with Cisco Systems, Inc., The Boeing Co. and Digital Equipment Corp. Greenbaum, prior to joining Xylan in 1995, was vice president of engineering at ADC Fibermux and held engineering management positions at Ascom Timeplex, Inc. Lichtenberg also joined Xylan in 1995, and previously held senior management positions at Hewlett-Packard Co. and Motorola, Inc.

Andover, Mass.-based **FTP Software, Inc.** has named Susan Bostrom senior vice president of global marketing and strategic planning effective immediately. Previously, Bostrom spent two years as director of strategic planning for National Semiconductor.

Infrared Wireless LAN System
VIPSLAN-10

NOW YOU HAVE A NEW CHOICE WHEN INSTALLING A LAN SYSTEM



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Network managers have a new option when configuring 10Mbps Ethernet compatible LAN installations: VIPSLAN-10, designed for environments where wireless connectivity makes sense. Ideal as an addition to existing wired installations, VIPSLAN-10 is perfect for temporary workgroups, facilities, or immediate installation requirements. Or, use VIPSLAN-10 in manufacturing facilities, warehouses, older buildings and other situations which don't lend themselves to traditional wiring.

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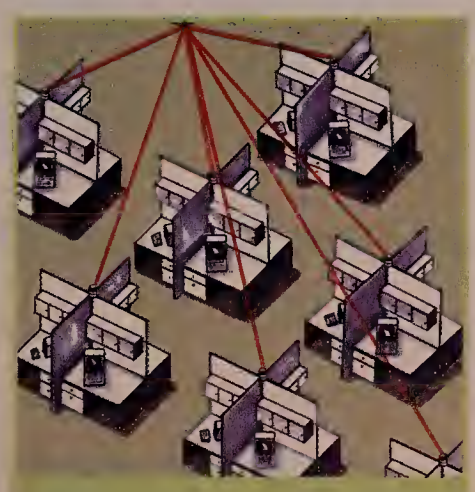

***VIPSLAN-10** is ideal for temporary LAN requirements and situations which don't lend themselves to traditional wiring, such as: temporary workgroups, manufacturing facilities, warehouses and older buildings.*

The VIPSLAN-10 system—which can be installed in as little as four hours— is comprised of six optional components. The three primary configurations are:

1. 360° ceiling-mounted Satellite–Node configuration supporting multiple users
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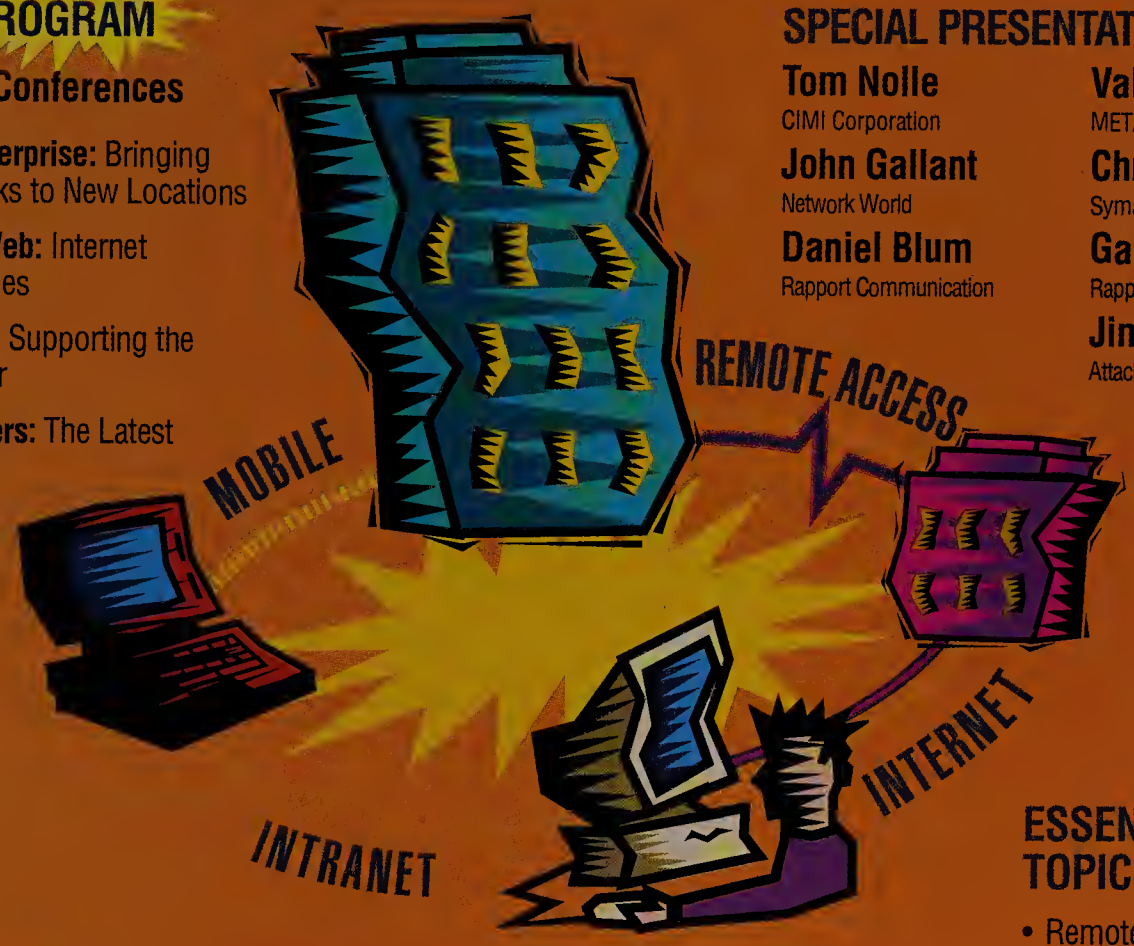

SPECIAL PRESENTATIONS:

Tom Nolle
CIMI Corporation

John Gallant
Network World

Daniel Blum
Rapport Communication

Val Sribar
META Group

Christopher Calisi
Symantec Corporation

Gary Rowe
Rapport Communication

Jim Lindner
Attachmate

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The most pressing information challenge you have today is getting corporate information to the people who really need it. Every company recognizes how important information is to its workers. **Network World Unplugged provides you with the knowledge and capability to get these workers, the small remote office worker and the "Road Warrior," connected better, easier and more cost effectively.**

Each of the Conference tracks takes you from benefit assessment, through alternative approaches, to implementation and includes real-world, focused solutions to the issues which are most critical to you, your business and your network, today and in the future.

A well-connected work force is the best competitive asset in the marketplace. This is your opportunity to hear about every aspect of "plugging in" your unplugged worker community, or making your current remote access strategy better and cheaper.

Take part in the many interactive panel discussions spread throughout the program. You will gain valuable insight and advice on which solutions are right for your organization and learn where this emerging market is headed. *Just look for the panel discussion icon.*

Table of Contents

Event Chair Address

Power To The People: Rethinking Corporate Information Priorities

Tuesday, 9:00 am - 9:50 am

Tom Nolle
President
CIMI Corporation

While many companies are building central LANs and complex private networks, they're sending the people who deal with their customers out into the information fringes of their business. New network technology options promise better ways to reconnect these lost workers, and to expand company information distribution so that location is never a barrier to empowerment. Mr. Nolle outlines the business problem that "unplugged" workers present, and discusses how the conference tracks show you how to reconnect them.

Keynote Presentations

Remote Access And The Virtual Corporation

Wednesday, 10:30 am-11:20 am

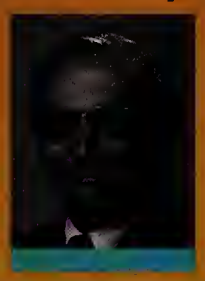
Christopher Calisi
General Manager
Remote Access Products
Symantec Corporation

Trends and developments in laptop computing, client/server applications and remote communications technology are spawning a new business model for world commerce. By investing heavily in telecommunications equipment and computer technology, companies are allowing their employees to work from remote locations. These trends will continue to define the emergence of "virtual organizations". Mr. Calisi addresses these trends and the opportunities they create in the remote communication field.

- Communications and the Internet
- Determining the Correct Remote Access Solution
- Remote Communications Case Studies

The Virtual Intranet For The 21st Century

Wednesday, 4:00 pm-4:50 pm



Dominick DeAngelo
Vice President of Data Product Management
Sprint

Intranets link a company's computers, software, databases and files into a single network, provide employees with universal access to business data with all the media-rich functionality of today's electronic communications. As a result, companies, can conduct "mission-critical" business online in a convenient, time-sensitive and cost-efficient fashion. Mr. DeAngelo explores today's network and how it must support bandwidth on demand for applications requiring efficient and rapid storage and retrieval of data.

- Attaining Advanced Communication Applications
- Supporting Network Structures
- Data Security

Turning The Power Of Web Inward - Intranets

Thursday, 9:30 am-10:20 am

Jim Lindner
CEO
Attachmate Corporation

As companies increase their publishing on the Web and as literacy with Web tools increases, businesses are taking a harder look at "Intranets" for internal information dissemination, augmenting or replacing existing inquiry-based systems. Software tools to build these Intranets may be the most important technical component in an advanced remote access strategy.

- Intranet Strategies
- Software Tools Used to Build Intranets
- Advanced Remote Access Strategies

Supporting The Unplugged Worker With CDPD Services

Thursday, 1:30 pm-2:20 pm

Bob Hirsh
Director, Wireless Data Distribution
Bell Atlantic NYNEX Mobile

The growth in mobile workers and telecommuters has precipitated the need for "on-the-go" data communications. Many companies are turning to cellular digital packet data (CDPD) technology to provide these workers access to information quickly and accurately, enabling them to be productive away from the office. Mr. Hirsh discusses how BANM worked with Public Service Electric & Gas (PSE&G) to evaluate its need in reengineering its workforce to customize a solution for providing service on-demand with wireless data.

- Implementing Wireless Data Services
- CDPD Technology and its Affect on Wireless Communications
- Meeting the Demands of Mobile Workers

Extending The Enterprise

Extending The Enterprise: Bringing Corporate Networks To New Locations

Getting a user at a backbone site wired into corporate information flows is easy, but it's a lot harder for users at remote sites or working at home. This conference track explores the issues of remote branch office connection, from information policy and security to advanced connection technologies like frame relay and ATM. For a complete exploration of the special issues of small fixed-site users, this track is the one!

CHAIRMAN'S ADDRESS

Remote Access Infrastructure: Strategically Extending The Enterprise

Tuesday, 10:00 am-10:50 am

Val Sribar
Vice President & Service Director, Global Networking Strategies
META Group

Remote access environments have been rife with point solutions and tactical "work arounds" typically leading to an unmanageable mess. This session focuses on the evolution from point solutions to a strategic corporate infrastructure that delivers general remote access services to remote and SOHO (Small Office, Home Office) workers. Mr. Sribar compares and contrasts the various technologies (remote node, remote control, routing, authentication, encryption) and carrier services (analog, ISDN, frame relay, X.25), as well as best practices in managing, operating, and supporting remote access connectivity.

- Remote Access Technologies and Carrier Services
- Supporting Remote Access Connectivity
- A Strategic Corporate Infrastructure that Delivers
- Remote Access Services

Remote Control Vs. Remote Application Services Vs. Remote LAN Access

PANEL DISCUSSION

Tuesday, 1:30 pm-2:20 pm

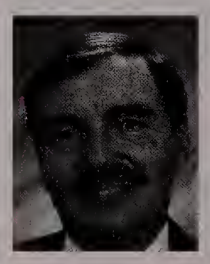
Moderator: John Gallant
Editor-In-Chief
Network World

Nothing ever seems to be easy in remote access, including the basic approaches to providing remote users with application connection and not just a phone connection. Panelists discuss the alternatives for providing a remote user application access, including:

- Remote Control Technology
- Specialized Groupware Applications
- Customized Remote User Capabilities

Advanced Services For Remote Access

Tuesday, 2:30 pm-3:20 pm



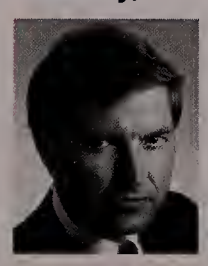
Tom Nolle
President
CIMI Corporation

New carrier services, like frame relay and SMDS, have been very successful in remote access applications. This session examines the special service options available and teaches you how to determine whether they're right for your business.

- Carrier Services (Frame Relay and SMDS)
- Remote Access Applications
- Special Service Options

Telecommuting Cost Analysis And Organizational Management Issues

Tuesday, 3:30 pm-4:20 pm



Tom Cross
Chairman
Cross Market Management Company

One of the "quietest" revolutions taking place in the work place today is the virtual office. Mr. Cross discusses what telecommuting is and is not. He explores the management issues that come along with the virtual office as well as telecommuting technologies.

- The Changing Office Paradigm
- Top Ten Tips to Telecommuting
- Telecommuting Cost Analysis

Selling Remote Access/Mobile Computing To Upper Management

Wednesday, 8:30 am -9:20 am

Tom Nolle
President
CIMI Corporation

Learn how to get those critical management buy-ins. Mr. Nolle outlines the benefit categories for remote/mobile access projects, provides tips on keeping costs under control and offers suggestions on the best ways to approach management when the details look a little too soft. There'll be plenty of opportunity to ask your own questions, and plenty of hard statistics to take back to the office.

- The Benefits Categories
- Keeping Costs Under Control
- Question and Answer Time

Remote Access: The ISDN Solution

Wednesday, 9:30 am-10:20 am

Steve Kelly
Director of Product Marketing
Cascade Communications

The demand for ISDN is being driven not only by the phenomenal growth of the Internet and its need for increased bandwidth, but by the emergence of the small office/home office (SOHO) and the telecommuting market. Despite its inception over 15 years ago, it is only now being hailed as the solution of bandwidth-hungry users due to its faster speeds, reliability and performance options. Mr. Kelly alleviates the confusion among end-user companies on the roles of the diverse carriers offering ISDN services as well as the different vendors offering ISDN equipment.

- Role of ISDN Carriers
- ISDN Equipment Technology Requirements

Telecommuting: Taking IT Home

Wednesday, 2:00 pm-2:50 pm

Marlo Kosanovich
Research Analyst, Global Networking Strategies
META Group

Allowing workers to operate out of their homes makes good business, particularly when the pressures of doing business in multiple time zones threatens to extend work hours. The success of telecommuting depends on the strategies and technologies selected. This session explores these issues and discusses whether you should target an individual worker or a whole department.

- Social Implications - Challenge of Creating Teams
- Infrastructure - ISDN, Remote Node
- Regulatory Issues

Remote Application Management

Thursday, 8:30 am-9:20 am

Chris King
Research Analyst, Services & Systems Management Strategies
META Group, Inc.

Remote enabling applications brings with it a host of new management issues. Not only do applications require custom configuration and tuning, but the simple fact that users are not in conventional offices significantly complicates configuration tracking, version control, software upgrades, and other systems issues. This session covers the unique alternatives and twists on systems management of remote users.

- Remote Management Issues
- Systems Management for Remote Users

Controlling The Cost Of ISDN Remote Access

Thursday, 2:30 pm-3:20 pm

Guy Daniello
Vice President of Research and Development
Shiva Corporation

With ISDN's high speeds, reliable connections and quick connect times, remote access can truly feel like local access. However, many ISDN routers are a disappointment when it comes to keeping chatty LAN protocols off costly WAN links. As a result, companies are incurring huge ISDN connection charges that dwarf even high-priced leased lines. To combat this, virtual connections and spooling technology that extend all the way to the remote client are key issues in ISDN usage to minimize connect-time costs. Mr. Daniello discusses the following issues:

- How Can Companies Manage Their Skyrocketing Telecommunications Bills?
- What Is the Competitive Advantage to Tariff Management?
- How Does Tariff Management Fit into the Future of Network Protocols and Services?

Complete your education by attending a Pre and Post Conference Seminar! See page 13 for details.

Working On The Web

Working On The Web: Internet And Intranet Strategies

Every business knows that the Internet today is a critical business tool. Corporations are already using Internet tools to build "Intranets" to publish a wide variety of information. In fact, some companies report Intranet traffic already exceeds traffic to their central data center. This conference track examines the use of the Internet as a remote connection alternative to dial-up, as well as the use of Internet tools to develop in-house information distribution systems.

CHAIRMAN'S ADDRESS

Messaging On The Intranet: The Great Convergence

Tuesday, 11:00 am-11:50 am

Daniel Blum, *Principal*
Gary Rowe, *Principal*
Rapport Communication

This presentation focuses on an increasingly important part of the enterprise information landscape - the Intranet. Intranet techonologies are centered around electronic messaging and access to the World Wide Web, enabling a continuous, logical flow of secure external electronic commerce and internal groupware/workflow-based activities. The wave of Intranet expansion is facilitated by the rise of open Internet standards that have enabled enterprises to pursue a "best of breed" strategy, leveraging multiple vendor offerings.

- The Current State of the Intranet
- Future Technology Direction
- The Impact these Technologies Have on the Way You Conduct Business

Using A Web Browser To Access Information

Tuesday, 1:30 pm-2:20 pm

Pat Byrne
Director of Product Marketing
Interleaf, Inc.

The timely distribution of critical information to a broad and remote audience has always been a challenge. How can the Internet help ensure a work force fast and simple access to the most up-to-date information? Mr. Byrne discusses how to use standard Web browsers and a friendly "home page" style interface, to interact with the virtual Web to search, navigate and retrieve information from corporate collections. This on-demand access provides the right information, in the right presentation, to the right person, at the right time, in the right location.

- Distributing Critical Information
- Enterprise-Wide Access to Corporate Collections

Lotus Notes And The Internet

Tuesday, 2:30 pm-3:20 pm

Andrew Mahon
Product Manager
Lotus Development Corporation

In 1995, businesses discovered the value of low cost Web browsers and servers to easily reach customers, prospects, suppliers, business partners and internal employees with relevant up-to-date information. Today, as internal and public Web sites increase in size, complexity and strategic value, the focus of Web technology is quickly moving to the Web server. Mr. Mahon reviews the new applications that will be possible using the growing power of Web servers.

- Web Browsers and Servers
- New Applications
- Emerging Requirements

Intranets: The Future Of Collaborative Computing

Tuesday, 3:30 pm-4:20 pm

Gary Brooks
Group Product Marketing Manager
Digital Equipment Corporation

Because corporate Intranets utilize Internet technology, employing them to develop collaborative computing environments is less expensive and more promising than traditional workgroup software. This presentation traces the evolution of collaborative computing, from the mainframes of the late 1970's to today's groupware software and then focuses on where the next technology shift will lead.

- A Historical Perspective on Collaborative Computing
- Corporate Intranets As a Collaborative Computing Solution
- The Benefits of Corporate Intranet Usage
- Where Internet/Intranet Technology Is Headed

Firewalls And The Future Of Internet Security

Wednesday, 8:30 am-9:20 am

Gregg Lebovitz
Director of Security Products
BBN Corporation

While the Internet brings an electronic highway full of consumers and suppliers, it also brings electronic riffraff and professional cyberthieves. This session helps you build a complete Internet firewall solution from off-the-shelf hardware, software and security policy templates. It provides tips and techniques to greatly reduce the security risk to your corporate data.

- Internet vs. Intranet
- Security Management
- How Firewalls Help Reduce The Risks
- How to Pick the Right Firewall Solution
- The Future of Firewalls

Java And Wireless Communications

Wednesday, 9:30 am-10:20 am

Kelly Wilson
Senior Systems Engineer
Sun Microsystems, Inc.

How might Java play in the world of wireless communications? What are some of the requirements and issues that need to be considered in order for Java to operate in a wireless environment that has a low data rate and is unreliable from a networking perspective? Mr. Wilson reviews Java technology and how it maps into this environment.

- Java's Mission as an Internet Language
- Java's Role in the World of Wireless Communications
- The Constraints Java Must Accomodate in a Networked Wireless Environment

The Internet Meets The Telephony World

Wednesday, 2:00 pm-2:50 pm

Daniel W. Latham
President and CEO
Sattel Communications Company

Activities within the telecommunication segment is at an all-time high fueled by the Telecommunications Act of 1996. This session highlights the business opportunities and how to capitalize on them. The areas covered include:

- ALECS and CLECs
- CAPs
- CATV
- ISPs

Plugging Into The Network Infrastructure: Dial Access To The Internet And Frame Relay/ATM Corporate Nets

Thursday, 8:30 am-9:20 am

Peter Alexander
Executive Director
StrataCom

The past decade has witnessed a revolution in the way that information is stored, processed and exchanged. As a result of new and more affordable networking capabilities, such as ISDN, frame relay and ATM, organizations are changing the way business is conducted. A fundamental transformation of the business process is being enabled by these technologies - allowing users to dynamically access corporate resources from remote locations. Branch offices, business partners and telecommuters all require dynamic access to applications on the enterprise net. What's the most efficient and cost-effective way to provide it?

- New Alternatives to Accessing Frame Relay/ATM
- Branch and Remote Office Connectivity
- Internet Access Dial Backup

Remote And Mobile Computing On The Internet

Thursday, 2:30 pm-3:20 pm

Sami Jajeh
Director, Marketing Development
XcelleNet, Inc.

In enterprise networks, information is more powerful when distributed widely and rapidly. To remain competitive, organizations must streamline information exchange, offering field representatives and mobile users easy access to business-critical information. Mr. Jajeh discusses a new collaborative computing paradigm, one in which corporate Intranets help revolutionize remote user support.

- How Organizations Use the Internet to Automate Remote and Mobile Business Processes
- How to Better Synchronize Information Flow Using the Internet
- How to Make Efficient and Flexible Use of "Landline," Wireless, and LAN-Based Communications Environments

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Mobile Solutions

Mobile Solutions: Supporting The Unplugged Worker

More and more of our key workers spend a typical busy hour in an airport lounge rather than at their desk. These workers are often cut off from their office information resources, and this lack of critical information can make them less effective, even compromise some of their key decisions. This track examines the challenges of the mobile worker, the technologies that support them, and the standards that are guiding product and network evolution.

CHAIRMAN'S ADDRESS

Remote Enabling Applications "The Holy Grail"

Tuesday, 10:00 am-10:50 am

Mike Rothman
Vice President,
Global Networking
Strategies Service
META Group

The innermost desire of remote users is to leverage corporate applications and data as effectively as large- site employees. Unfortunately, remote world realities often dictate that this is impossible for conventional applications, especially true for workers who dial in casually or employ wireless remote access. This session addresses the alternatives and tradeoffs for remotely enabling applications including:

- Application Re-Engineering
- Remote Access Middleware
- Remote Control
- Running Applications on Remote Clients

Wireless Access To The Internet

PANEL DISCUSSION

Tuesday, 1:30 pm-2:20 pm

Moderator: Ira Brodsky
President
Datacomm Research Company

The spectacular rise of the Internet—the network of networks—creates exciting opportunities (as well as daunting challenges) for wireless access. How can users reach the Internet without wires today? What new options can we expect over the next three years? This session explores wireless solutions for both fixed and mobile connectivity.

- What is Mobile IP and Will It "Wireless-Enable" the Internet?
- Which Networks and Products Are Best-Suited to the Job?
- What New Applications Will Wireless Connectivity Spawn?

Authentication And Encryption

Tuesday, 2:30 pm-3:20 pm

Jim Geary
VP of Marketing
Security Dynamics

Opening the network to remote users creates additional security hazards that IT needs to address. Authentication and encryption technologies have become critical for keeping unauthorized users out of the corporate network and protecting data as it traverses the public network. Topics discussed:

- How Does Remote Access Change Security Requirements?
- What Tactical Solutions Can Be Used to Address these Potential Security Holes?
- What Changes Need to Be Made to Enterprise Security Policies?

CDPD - The Mobile Answer?

Tuesday, 3:30 pm-4:20 pm

Tim Schmidt
Managing Partner
Encore Consulting Group, Inc.

Wireless providers have been successful at selling voice services, but wireless packet data using CDPD technology has not found its niche in the market. CDPD is now being positioned as the answer to wireless Internet/Intranet access. Mr. Schmidt reviews CDPD technology as an access medium.

- TCP/IP as the Wireless Transport Medium
- The Costs Associated with Wireless Internet/Intranet Access
- Access to Enterprise Systems Via CDPD Networks

New Technologies For Mobile Computing

PANEL DISCUSSION

Wednesday, 8:30 am-9:20 am

Moderator: Tim Bajarin
President
Creative Strategies

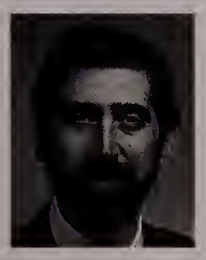
Explore the many technologies that impact mobile computing. Each panelist discusses what's new in mobile technology and what will make the productivity of your "road warrior" easier and more efficient on the road.

- Features and Functionality
- Storage Devices
- PC Cards

Wireless Data - Still Unplugging Away

PANEL DISCUSSION

Wednesday, 9:30 am-10:20 am



Moderator: Bill Frezza
President
Wireless Computing Associates, Inc.

The wide area wireless data business remains stuck in first gear, building a modest business in the vertical markets while searching for the elusive killer app that will propel it into faster growth in horizontal markets. This panel looks at recent advances in hardware, software and services that could bring this dream one step closer to reality.

- Hardware and Software Advances
- Service and Support

Taking The Internet/Intranet Mobile

Wednesday, 2:00 pm-2:50 pm

Tim Schmidt
Managing Partner
Encore Consulting Group, Inc.

Internet development is exploding. Are these new Internet developments answering the need of the millions of notebook computer users? Mr. Schmidt takes a look at these emerging tools and discusses how they can meet the needs of the mobile and field force workers.

- Active-X, JAVA, Telescript and WEB Objects - How Do they Address the Unplugged User?
- Where Do the Applications Need to Reside?
- Internet/Intranet Mobile Architectures

Extending Applications To The Edge Of Your Network

Thursday, 8:30 am-9:20 am

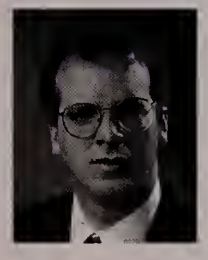
Mike Santiago
Product Marketing Manager
U.S. Robotics

The next generation of information access has arrived. The ability to provide applications like EMail, videoconferencing and Web services to remote users improves remote access performance, decreases network traffic and increases security. Mr. Landry provides insight into this pioneering new technology and its positive consequences for network administrators and users.

- Remote Access Performance
- Network Configuration
- Security Issues
- Applications
- Moving to the Networks' Edge

Key Security Solutions

Thursday, 2:30 pm-3:20 pm



David Morris
Executive Vice President
Cylink Corporation

As workers are becoming more mobile, companies are finding an immediate need to deploy strong and scalable security solutions. This session presents an introduction to Public Key Technology as it provides:

- Authentication
- Access
- Privacy
- Integrity
- Non-repudiation

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Issues & Answers

Issues & Answers: The Latest Technologies

This up-to-the-minute track features a variety of fast-paced head-to-head debates between industry experts and vendors on what's best in remote access. These futuristic technology presentations are guaranteed to take you over the edge.

Videoconferencing: Do You Need Virtual Workers?

Tuesday, 1:30 pm-2:20 pm

Peter Moynahan
Director, Product Manager
Sprint Meeting Channel

Somehow the idea of remote workers seems at odds with the feeling most of us have - that many real business relations require face-to-face discussions. In this session, find out what the real benefits of video-based collaboration are, and the technical options that will take you there if you really need to go. Get ready to hear about the very latest in telecommuting, H.320, and MPEG video.

- The Latest Technologies
- Technical Options
- What Are the Benefits

Intelligent Remote Access To Legacy Systems

Tuesday, 2:30 pm-3:20 pm

Trilok Manocha
President & CEO
River Run Software Group

Connectivity between mobile computers and legacy enterprise systems tends to be complex, especially if we consider the different types of network options and the types of mobile computers. Mr. Manocha describes how powerful middleware can be.

- Using Middleware to Access Corporate Data from PDAs
- Role of Agent Software in Remote Access
- Enabling Software for Writing Wireless Applications

Virtual Office - Options And Issues

Tuesday, 3:30 pm-4:20 pm

Nick d'Arbeloff
Founder and Vice President
Wildfire Communications

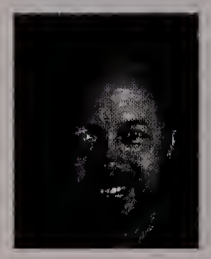
Easy-to-use remote computing solutions allow busy professionals to stay constantly in touch with the office. But what happens to productivity when road warriors don't have access to their computers? New technologies exist that allow mobile workers to stay connected, and they're simpler than you think.

- What Options Remain when a Business Person Cannot Carry a Portable Computer, Fax Machine and Wireless Phone?
- Communications Issues for the Mobile Workforce
- Arming the Warrior - Matching Mobile Workers to the Appropriate Technologies

How Many Vendors? The Single-Source Dilemma

PANEL DISCUSSION

Wednesday, 8:30 am-9:20 am



John Gallant
Editor-in-Chief
Network World

Is it better to have one vendor who you can shout at when things go wrong, or many suppliers so that they keep each other honest and get you the best prices and terms? Hear from vendor representatives and network integrators who present the benefits and risks of both the "let me integrate" and the "one-stop-shop" approaches. They also give you a set of tests to apply to your own situation so you can make the best deal.

- The Risks
- Features and Functionality
- The Benefits

Data Collaboration Standards: The T.120 Story

Wednesday, 9:30 am-10:20 am

Neil Starkey
Chief Technical Officer
DataBeam Corporation

What standard controls the most critical business application, is supported by both software and hardware vendors, and is almost invisible to users? The answer is T.120. This session shows you the state of this critical standard, what it covers, how it is already impacting products, and how it may shape the way your remote workers collaborate in the future.

- The State of the T.120 Standard
- How Does T.120 Shape Your Remote Workers' Future
- The Impact of T.120

Internet Telephony

PANEL DISCUSSION

Wednesday, 2:00 pm-2:50 pm

Moderator: Bill Frezza
President
Wireless Computing Associates, Inc.

From its first fumbling steps to incorporation into the latest version of Netscape's Web browser, voice over the Internet is coming on like gangbusters. The Association of Competitive Telecommunications Access (ACTA), a group of long distance resellers, felt so threatened by Internet telephony that they actually petitioned the FCC to make it illegal. This panel explores the realities of Internet telephony and its potential to reduce long distance phone charges while adding another dimension to the Web experience.

- Overview of Internet Telephony
- Practical Realities of Internet Telephony

Notebooks: The Road Warriors' Ultimate Tool

PANEL DISCUSSION

Thursday, 8:30 am-9:20 am

Moderator: Barton Goldenberg
President
ISM, Inc.

Notebooks have now become the basic portable computing device of choice. Following short presentations from key vendor panelists concerning the functionality, features, service and future direction of notebooks, Mr. Goldenberg moderates a lively question and answer session between participants and vendors.

- The Top Industry Notebook Vendors
- Notebook Features/Functionality/Service
- Future Direction of Notebooks

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CONFERENCE AT - A - GLANCE

Network World UNPLUGGED

TUESDAY, SEPTEMBER 10, 1996

	Extending The Enterprise: Bringing The Corporate Network To New Locations	Working On The Web: Internet & Intranet Strategies	Mobile Solutions: Supporting The Unplugged Worker	Issues & Answers: The Latest Technologies
7:00-8:30	Conference Registration			
9:00-9:50	Event Chair Address: Power To The People: Rethinking Corporate Information Priorities - T. Nolle, pg 3			
10:00-10:50	Chairmen's Addresses: Remote Access Infrastructure: Strategically Extending the Enterprise - V. Sribar, pg 4 Remote Enabling Applications: "The Holy Grail" - M. Rothman, pg 8			
11:00 - 11:50	Chairmen's Address: Messaging On The Intranet: The Great Convergence - D. Blum and G. Rowe, pg 6			
12:00-1:30	Lunch Break			
1:30-2:20	Remote Control Vs. Remote Application Services Vs. Remote LAN Access Panel - J. Gallant, pg 4	Using A Web Browser To Access Information - P. Byrne, pg 6	Wireless Access To The Internet - I. Brodsky, pg 8	Videoconferencing: Do You Need Virtual Workers? - P. Moynahan, pg 10
2:30-3:20	Advanced Services For Remote Access - T. Nolle, pg 4	Lotus Notes And The Internet - A. Mahon, pg 6	Authentication And Encryption - J. Geary, pg 8	Intelligent Remote Access To Legacy Systems - T. Manocha pg 10
3:30-4:20	Telecommuting Cost Analysis & Organizational Mgmt. Issues - T. Cross, pg 4	Intranets: The Future Of Collaborative Computing - G. Brooks, pg 6	CDPD - The Mobile Answer? - T. Schmidt, pg 8	Virtual Office: Options And Issues - N. d'Arbeloff, pg 10

WEDNESDAY, SEPTEMBER 11, 1996

8:30-9:20	Selling Remote Access/Mobile Computing To Upper Management - T. Nolle, pg 5	Firewalls And The Future Of Internet Security - G. Lebovitz, pg 7	New Technologies For Mobile Computing - T. Bajarin, pg 9	How Many Vendors? The Single-Source Dilemma - J. Gallant, pg 10
9:30-10:20	Remote Access: The ISDN Solution - S. Kelly, pg 5	Java And Wireless Communications - K. Wilson, pg 7	Wireless Data: Still Unplugging Away - B. Frezza, pg 9	Data Collaboration Standards: The T.120 Story - N. Starkey, pg 10
10:30-11:20	Keynote Presentation: Remote Access And The Virtual Corporation - C. Calisi, pg 3			
11:30	EXPO OPENS			
12:00-2:00	Lunch Break & Visit the Expo Floor			
1:00-1:50	Technology Briefings			
2:00-2:50	Telecommuting: Taking IT Home - M. Kosanovich, pg 5	The Internet Meets The Telephony World - D. Latham, pg 7	Taking the Internet/Intranet Mobile - T. Schmidt, pg 9	Internet Telephony - B. Frezza, pg 11
3:00-3:50	Expo Time			
4:00-4:50	Keynote Presentation: The Virtual Intranet For The 21st Century - D. DeAngelo, pg 3			
5:00-6:00	Expo Time			

THURSDAY, SEPTEMBER 12, 1996

8:30-9:20	Remote Application Management - C. King, pg 5	Dial Access To The Internet And Frame Relay/ATM Corporate Nets - P. Alexander, pg 7	Extending Applications To The Edge Of Your Network - M. Santiago, pg 9	Notebooks: The Road Warriors' Ultimate Tool - B. Goldenberg, pg 11
9:30-10:20	Keynote Presentation: Turning The Power Of The Web Inward: Intranets - J. Lindner, pg 3			
10:30	EXPO OPENS			
11:00-11:50	Technology Briefings			
12:00-1:30	Lunch Break & Visit the Expo Floor			
1:30-2:20	Keynote Presentation: Supporting The Unplugged Worker With CDPD Services - B. Hirsh, pg 3			
2:30-3:20	Controlling The Cost Of ISDN Remote Access - G. Daniello, pg 5	Remote And Mobile Computing On The Internet - S. Jajeh, pg 7	Key Security Solutions - D. Morris, pg 9	
3:30-4:30	Expo Time			
4:30	Closing Address			

Pre & Post Conference Seminars

Complete your Network World Unplugged education by attending these full day seminars, held before and after the three day conference. These essential sessions explore a subject in-depth, in a classroom-style setting and send you back to the office with solutions you can implement immediately. See the back page for registration information.

Pre Conference Seminars

Monday, September 9th, 9:00 am - 5:30 pm

Using The Internet To Target Your Prospects

David Radin, *President , Marketing Masters*
Dave Kosoglow, *Vice President, Marketing Masters*

A major challenge for Web marketers is reaching their target audience of qualified prospects. However, most Internet resources are not designed for target marketing or traditional sales techniques. This seminar covers the challenges and basics of attracting the right audience and examines the ways you can motivate them to return regularly for additional product information or to enter into actual business transactions.

Totally Unplugged: An In-Depth Look At Wireless Technologies And Business Applications

Ira Brodsky, *President, Datacomm Research Company*

This intensive one day seminar provides a detailed look at the wireless technology choices. How do they work? How might they evolve over the next few years? Which players are likely to become winners? Mr. Brodsky answers these questions and gives in-depth comparisons of wireless voice and data technologies.

ISDN - The Basics And Beyond

Tom Cross, *Chairman, Cross Market Management Company*

Examine ISDN "made easy" for non-technical managers. Mr. Cross discusses ISDN applications options and offers a check list for easy implementation. Desktop Video Conference, a special ISDN application is moving this technology into the future. Discover how Desktop Video Conferencing is a "power tool" for any growing business. Learn about the driving factors to choosing this as a communications solution and go through a cost analysis, all in this full day session.

The Glue At The Crossroads: Mobile, Wireless And The Internet

Tim Schmidt, *Principal, Encore Consulting Group, Inc.*

As the convergence of mobile computing, wireless and Internet/Intranet technologies occurs, many new issues need to be considered. This session provides an in-depth look at these emerging technologies and deals with the issues that need to be addressed when trying to work with them together.

Post Conference Seminars

Friday, September 13th, 9:00 am - 5:30 pm

Business Approach To An Internet Strategy

David Shimberg, *President, Business Technology Adventures, Inc.*

An Internet presence requires sound business planning, process, people and tools. This seminar covers the business planning process for Web deployment. Mr. Shimberg guides you through the strategic and tactical steps required to position your corporation, your customer and the Web in a successful way. Learn how to create a Web business plan, an infrastructure plan and the basic concepts involved in the design of the Corporate Home Page.

Migrating To ATM - A Technology Overview

Harrell Van Norman, *Senior Communications Manager, EG&G Mound Applied Technologies*

This in-depth overview of ATM begins with a brief history of its evolution, explains key ATM concepts, progresses to a detailed discussion of associated technologies and standards and ends with a summary of challenges in ATM deployment. Learn how to integrate ATM into your LAN and WAN environment and what classes of services are currently available. Actual case studies and a question and answer session are included in this interactive seminar.

Understanding The Java Phenomenon

Dan Mezick, *President, New Technology Solutions, Inc.*
Scott Hillier, *Co-Author of Inside Visual Basic Scripting Edition*

This session explores Java: what it is, what it's good for, and why you should care about Java Scripting, Java applets, and Java development. Using Microsoft's Jakarta development environment for examples and demonstrations, this session explores the key aspects of Java that will impact your work and application planning. Attendees must have a programming background to get the most out of this seminar. **Attendees receive a FREE disk with Visual Basic Script Source Code, Web pages and Java app examples.**

NetworkWorld UNPLUGGED EXPOSITION

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THURSDAY, SEPTEMBER 12, 10:30 AM-4:30 PM

Explore What's New, What's Hot and What Works for You!

No where else can you experience the latest remote access, wireless, mobile and Internet technologies, all under one roof. Receive valuable insight on what solutions are right for your organization and see the latest technologies in action.

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Join the experts in the remote access arena at the REMOTE ACCESS WORKSHOP. This incredible workshop features only the top industry leaders presenting their most compelling remote access user story. Receive in-depth, first-rate advice and then check out the expo floor for a live demonstration of their product(s). Walk away with a clear understanding of feasible solutions to your remote access challenges.

The Virtual Panel

You're a "virtual panelist" in this lively session which features remote access and Internet experts. Cast your votes on the technologies and issues that will shape remote access and Internet management in the days ahead, and compare your views with those of analysts and vendors.

SOHO Forum

Hear from experts, explore the technologies at the special forum dedicated to those users in a Small Office or a Home Office. The SOHO forum addresses: technology alternatives, investment challenges and the benefits of creating a SOHO environment.

Live Internet Access at the Cybercafe

Cruise the World Wide Web and Internet in a casual setting. Come meet experts who can introduce you to this new, exciting and informative world on the Internet. Check out everything from the hottest Web sites to newsgroups and learn how this technology is an important business tool today and for the future.

Participating Companies

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* Attachmate Corporation
Aurum Software
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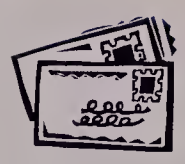

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OQEWN01

Briefs

TeamWARE, *a division of* **Fujitsu Software Corp.,** *will ship its* **Internet Messaging Server** *this month. The software provides native support for Internet E-mail standards such as Post Office Protocol 3 and Simple Mail Transfer Protocol. It also supports Multipurpose Internet Mail Extensions, a standard for sending audio and video mail attachments via the 'Net. TeamWARE is packaging the Internet Messaging server with its Embla Internet E-mail client and its TeamWARE crypto security software. However, the server also works with standard POP mail clients. Pricing is $49 per seat for the first 5 users of the server software and $9 per client. TeamWARE: (888) 248-9273.*

Teubner & Associates, *in Stillwater, Okla., last week unveiled a version of its Faxgate* **fax server** *for Hewlett-Packard Co.'s OpenMail. Faxgate lets OpenMail users simultaneously send fax and electronic mail messages, eliminating the need for a separate fax client. Faxes are delivered to individual workstations as image files attached to E-mail messages. Faxgate runs on MVS mainframes and Application System/400s, a variety of Unix systems and Windows-based PCs. Available now, Faxgate ranges in price from $8,000 to $50,000. Teubner: (405) 624-2254.*

Candle Corp. *in Santa Monica, Calif., this week will announce its* **acquisition of SeverSoft, Inc.,** *a Scarborough, Maine-based developer of management tools for Lotus Development Corp.'s Notes. Candle will obtain rights to server-based it's assets, technology and products, including its flagship ServerWatch, software for managing Notes servers. Financial terms are not disclosed. Candle: (310) 829-5800.*

Percussion beats on the Notes workflow drum

By Barb Cole
Stoneham, Mass.
Percussion Software, Inc. last week announced software that adds workflow capabilities to Lotus Development Corp.'s Notes applications.

RealityCheck

Product
Notrix PowerFlow

Company
Percussion Software

The benefits
- ▲ Fills a functionality gap in Notes
- ▲ Notes users won't require additional client software to run workflow apps
- ▲ Can be used to workflow-enable existing Notes apps or to develop new Notes workflow apps

The drawbacks
- ▼ Server support is initially limited to Windows 95, Windows NT, OS/2 and Solaris
- ▼ Management of workflow apps is not integrated with Notes' administration tools
- ▼ Workflow maps are not available to all users included in the workflow

The user view
"The administration features let you see your workflow documents in action. You can see the status of a workflow and track how long it takes a document to move through the workflow."
Laura Wise, an independent Notes consultant based in Los Angeles

Notrix PowerFlow is client/server software that snaps into the Notes environment, adding graphical tools for building and managing workflow applications.

The software may be used to workflow-enable existing Notes applications or build new workflow applications around Notes, according to Barry Reynolds, president of Percussion. Specifically, it is designed for forms-based applications that are not transaction-oriented, such as purchase order processing, expense tracking and customer tracking, Reynolds said.

Any 'Notes client can be included in a workflow application, and no additional client software is needed. With the August release of Domino, a Web-accessible version of Notes, Web browsers may also participate in workflows.

Notrix PowerFlow consists of three components. The Windows-based PowerFlow Designer is a client-based flowcharting tool for designing workflow applications.

The PowerFlow Engine, which runs on the Notes server that is hosting the workflow application, manages the routing, rules and roles of the documents used in the application.

Finally, the Windows-based PowerFlow Console is the administrative piece that may be used to monitor and analyze workflow-enabled applications.

While other workflow products for Notes already exist, analysts did point out that there are Action and Staffware for workflow add-ons, but they said PowerFlow Notrix is the first that is truly Notes-centric.

Laura Wise, an independent Notes consultant based in Los Angeles, said Notrix PowerFlow brings order to workflow application development within Notes.

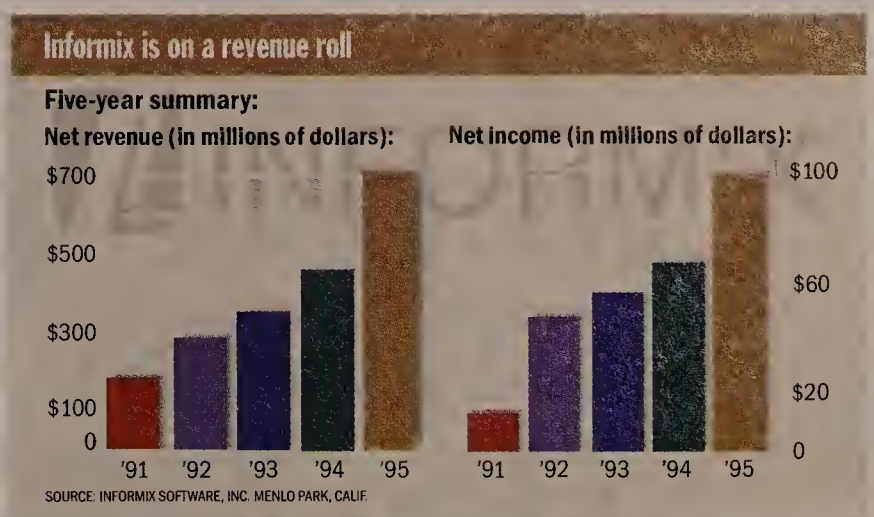
"Workflow within Notes has always been very scattered because there hasn't been a way to tie all the pieces together," Wise said.

Available now, a typical Notrix PowerFlow configuration that includes the designer, administrator and run-time licenses costs $9,995.

✆Percussion: (617) 438-9900.

NetworkWorld Fusion

Take a look at alternatives to Notes on Network World Fusion (http://www.nwfusion.com). Select News+ then Client/Server Applications.



Informix outlines database game plan

Executives answer users' queries at annual conference.

By John Cox
Menlo Park, Calif.
Informix Software, Inc.'s main technology directions were clearly signposted at its annual users' conference earlier this month.

Executives said the company is on schedule to integrate new object technology into its database so it can store an array of complex data types. Keynote speakers also reiterated an approach based on partnerships with key vendors to meet customers' Internet and World-Wide Web application needs.

In addition, the company unveiled new versions of its database management system for parallel computers and workgroup servers.

Informix is now working to integrate this technology with its database, the Informix-Online Dynamic Server.

The new product will be called Informix-Universal Server. It will ship to a select group of customers in September and be generally released in December, said Steven Sommer, vice president of worldwide marketing for Informix. The company recently released a developers' tool kit that users can work with now to build these applications.

"The approach they're taking is much more flexible than those taken by rivals such as Oracle Corp. and IBM," said Dan Kusnetzsky, a research director at International Data Corp. in Framingham, Mass.

That's because users and third parties can create modules that just plug into the database server. Users do not have to wait for their database vendor to add support for the specialized data types.

"We think it's a very important technology," said Jack Lee, operations manager at biotechnology company Amgen, Inc. in Thousand Oaks, Calif., a large user of Informix database software.

"We've been storing [images and so on] as binary large objects in Dynamic Server. But that's not very flexible," he said.

Working on workgroups

The new workgroup server, called Informix-OnLine Workgroup Server, along with a desktop version of the product are based on the same architecture as the database engine. Both products are integrated with Netscape Communications Corp.'s FastTrack Server, which is a Web server, and Netscape's Navigator Gold Web browser. The result lets adminstrators and users access the database via the Web.

On the high end, Informix-OnLine Extended Parallel Server 8.1 is now shipping. This version adds support for an array of parallel computers and clusters of multiprocessor computers.

✆Informix: (415) 926-6300 or http://www.informix.com.

SHARED LOGIC

It's crunch time for calendar software

It's time for group scheduling vendors to get together at the IETF and solve the interoperability problems between their packages.

Calendaring works fine as long as users employ the same LAN workgroup software, but it doesn't scale to an enterprise environment with two or more scheduling systems.

Consider a simplified chain of events set in motion by a scheduling request. First, a meeting coordinator selects desired attendees from a directory and asks the scheduling program to pick a good time for the meeting.

Second, the program retrieves and searches the free/busy schedules of all invitees and picks a time when everyone is said to be available. Once the coordinator approves, the program dispatches a meeting invitation by E-mail. As invitations are accepted, the meeting database is updated. The coordinator gets notified when the meeting setup is complete.

But if any invitees decline the invitation, it throws a monkey wrench into the works. The coordinator has to decide whether to hold the meeting without the declining party, or to reschedule and start the process again.

Problem is, when invitees are in different scheduling systems, the coordinators' calendaring program can't access their free/busy time databases. Without that data, the meeting time initially selected is more likely to cause conflicts.

In the past, users just lived with these problems. But lately, proliferating Internet connectivity has raised the bar by providing more opportunities for interoperability. Already, popular calendaring packages such as CaLANdar, Corporate Time and Ontime support Web browser access to their calendaring systems, and companies such as Lotus and Microsoft are getting ready to join the Web parade.

Daniel Blum

Duplicating entire user interfaces for the Web may be a start, but it isn't the easiest or most elegant interoperability solution for group scheduling. Much more efficient and useful would be a TCP/IP-based client/server calendar access protocol and an interchange format for free/busy data.

But wait, there's more. While the friendly Web browser or client/server scheduling protocol enables the meeting coordinator to access scheduling programs everywhere, it doesn't help the scheduling server access free/busy time databases for all potential invitees. For that, we need a multivendor scheduling protocol for server-server exchange of free/busy time information.

A final problem is integrating mobile users or extra-enterprise business partners into the scheduling "adhocracy."

Fortunately, there's a lot of work already on the table. There is an existing vCalendar format from Versit and the Calendaring Interchange Server Protocol from the MHS Alliance. In addition, Lotus is sponsoring an Internet Calendaring Access Protocol, and Hewlett-Packard and Netscape are holding substantive talks on scheduling. Moreover, an IETF Calendaring Working Group has been proposed and invitations have been sent out for a premeeting of major calendaring vendors. All involved should attend this meeting in a cooperative spirit to solve their customer requirements.

Says Jim Cunnie, a business development manager at AT&T and chairman of the Electronic Messaging Association's Groupware Committee, "Calendaring may be the first groupware interoperability problem to go to the IETF, and it ought to be the easiest to solve."

Blum is a principal at Rapport Communication, a consultancy that focuses on messaging, groupware and electronic commerce. He can be reached at dblum@interramp.com

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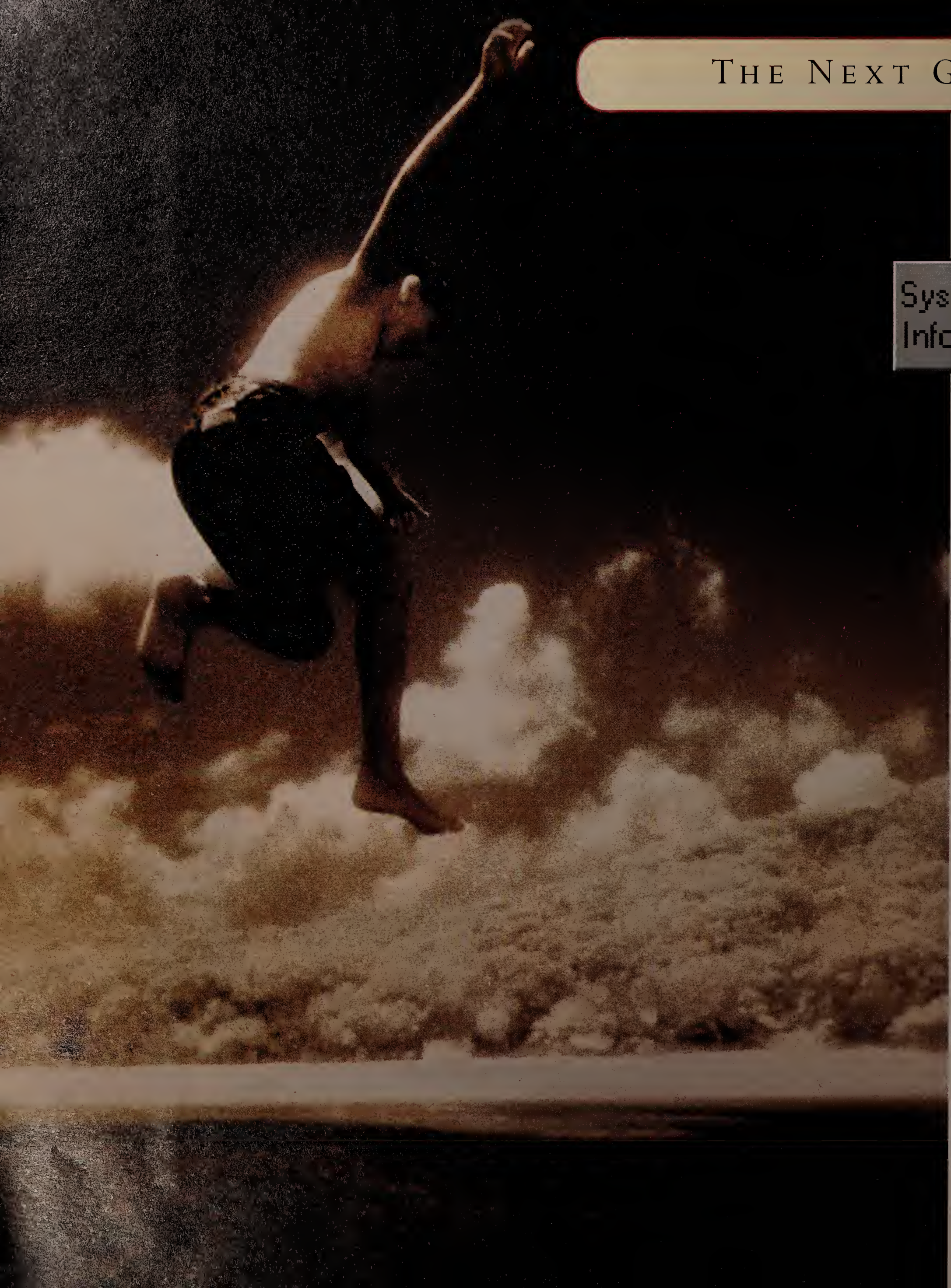
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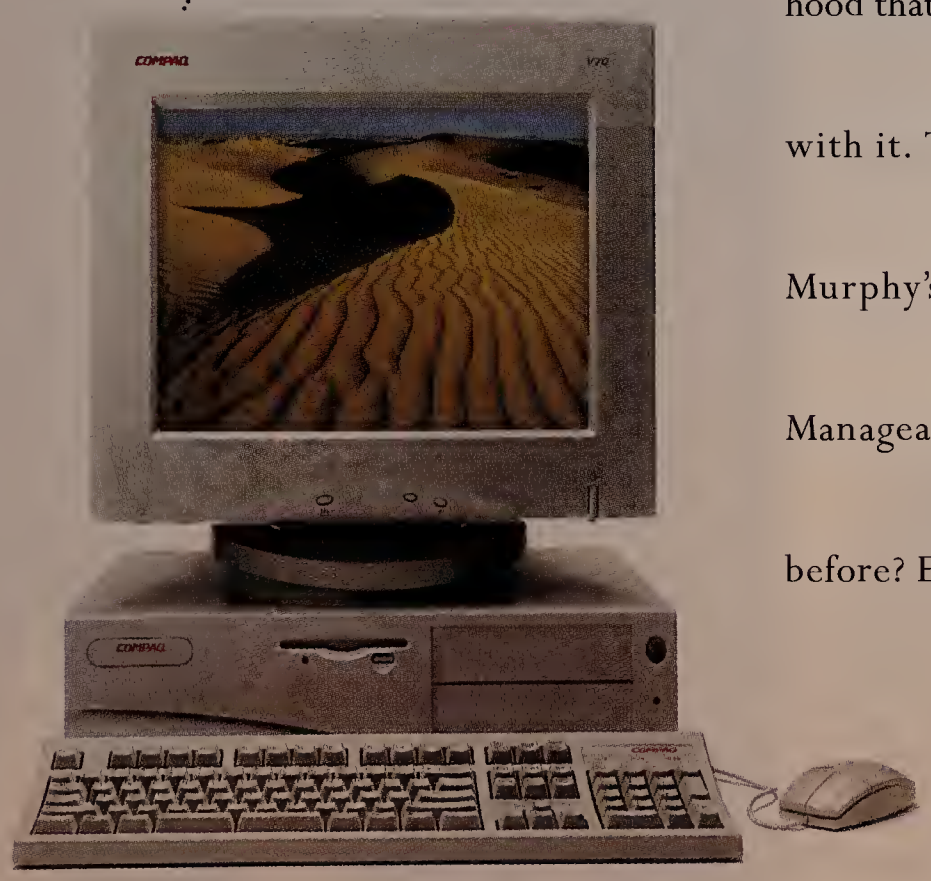

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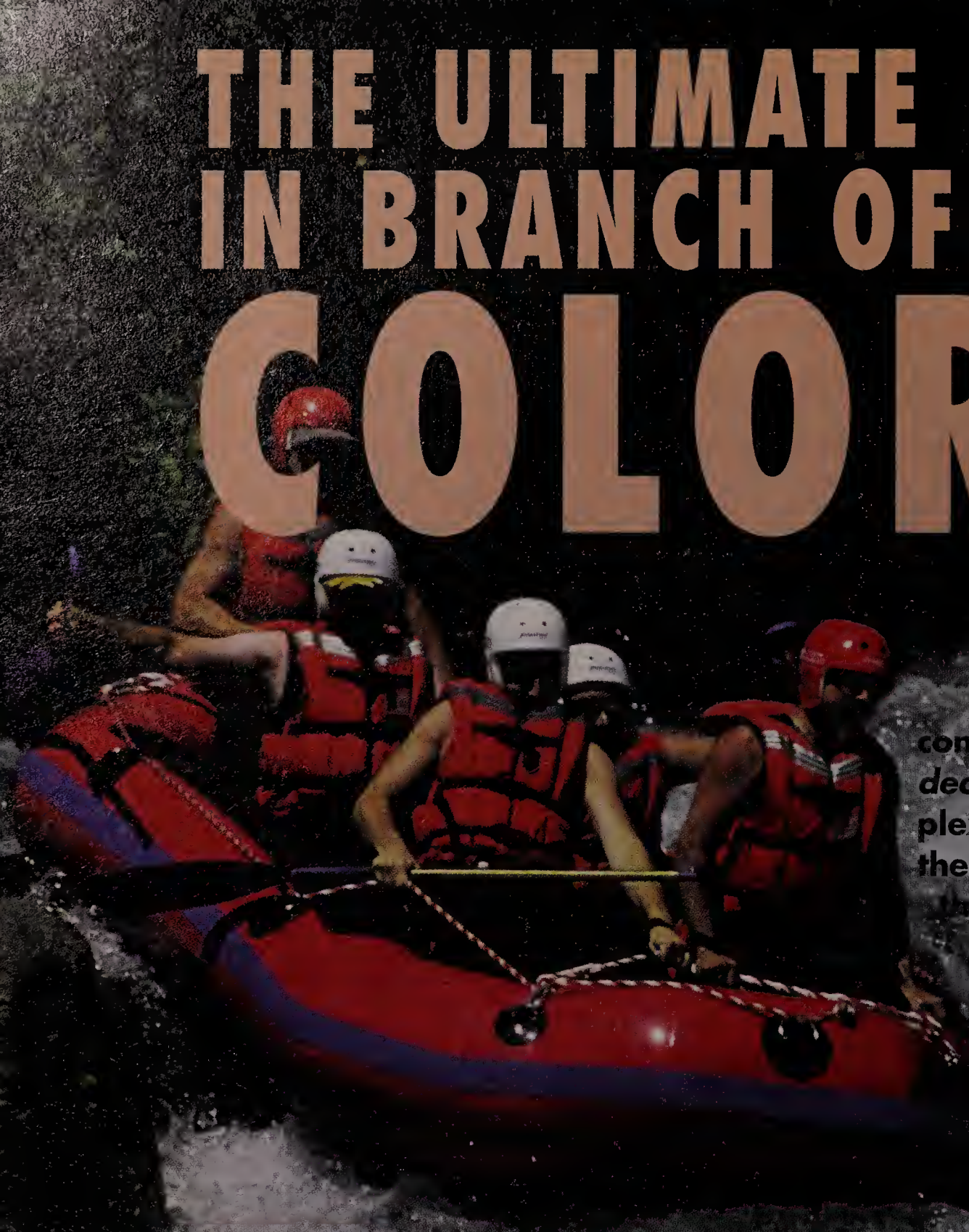

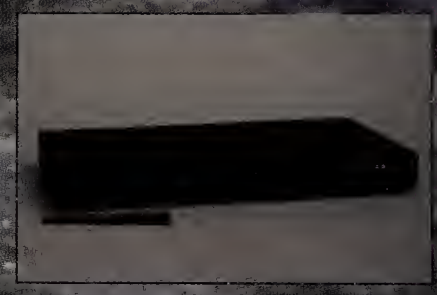

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Briefs

■ **IQ Software, Inc.** *has started shipping IQ/LiveWeb, a World-Wide Web adaptation of its IQ SmartServer application for* **generating production reports.** *IQ LiveWeb, which now*

outputs reports in HTML instead of proprietary format, costs $3,995 for the NT platform and $19,995 for Unix.

IQ Software: (770) 446-8880.

■ **PointCast, Inc.** *recently announced a partnership to add* **CNN news** *to its popular* **PointCast Network** *screen saver.*

Beginning in the fall, users will be able to see CNN news flashes popping up whenever their computer screens are idle. Other future options will include CNN Financial Network and CNNSI, a joint venture between CNN and Sports Illustrated.

The PointCast Network is a free news network that can be downloaded at www.pointcast.com.

■ **DigitalStyle Corp.** *of San Diego recently announced availability of its Style Group subscription service, providing new* **Web graphics** *packages on a monthly basis. The service is intended to complement the company's WebSuite tools and graphics, which work with all HTML editors, including Microsoft Corp.'s FrontPage and Netscape Communications Corp.'s Navigator Gold.*

Each new set of graphics, or Style Group, can be downloaded from DigitalStyle's Web site, at http://www.digitalstyle.com, or obtained on 3.5-inch disk or CD-ROM. The subscription service is priced at $59 per year.

WebSuite and Style Groups operate in Windows 3.11, Windows NT 3.51, Windows for Workgroups 3.11 and Windows 95.

DigitalStyle: (800) 541-1175.

Company secures firewall role

Secure Computing to gain market share and technology through recent shopping spree.

By Ellen Messmer
St. Paul, Minn.

Firewall vendor Secure Computing Corp. has gone on a buying spree, purchasing Border Network Technologies, Inc., Enigma Logic, Inc. and Webster Network Strategies. The company is after both market share and technology to beef up its product line.

Secure Computing's *Beseke*

The merger with Border Network Technologies next month will vault Secure Computing, which makes the Sidewinder firewall, to second place behind the sales leader in this crowded market, CheckPoint Software Technologies, Inc. (see graphic). Border, which sells the BorderWare Firewall Server, will operate separately as a wholly owned subsidiary in Toronto, said Kermit Beseke, Secure Computing chairman and chief executive officer. Beseke also said the two companies have complementary product lines. BorderWare, for instance, costs half the price of Sidewinder, which has more in the way of network auditing and reporting.

Long-term plans call for merging the two product lines through support for a common network management platform and IPSec, the standard for packet encryption.

Several companies, including Citibank, N.A., Goldman, Sachs & Co., Aetna Life & Casualty Co., United Airlines, Blue Cross/Blue Shield and American Airlines, Inc., use Sidewinder. But more than half of Secure Computing's $20.7 million in sales last year flowed from the Department of Defense and the National Security Agency (NSA).

Sidewinder this year will play an important role in the military's upcoming X.400-based Defense Message System as the provider of the DMS firewall. However, Beseke said he hopes Sidewinder will gain larger commercial presence worldwide through Border's distribution sales network in Asia and Europe.

Firewalls are typically used to block incoming IP packets or filter mail or File Transfer Protocol applications between intranets and the Internet. But their sentry duties are now expanding to other tasks, such as user authentication and controlling access to the Web.

With that in mind, Secure Computing next month will buy Enigma Logic, the Concord, Calif.-based supplier of client/server user identification, authentication and authorization products based on use of software or hardware tokens.

Yet another acquisition made last May of Webster Network Strategies gives Secure Computing the technology to do Web filtering. "Companies want to prevent cyberloafing and importation of online gambling and technology," Beseke said.

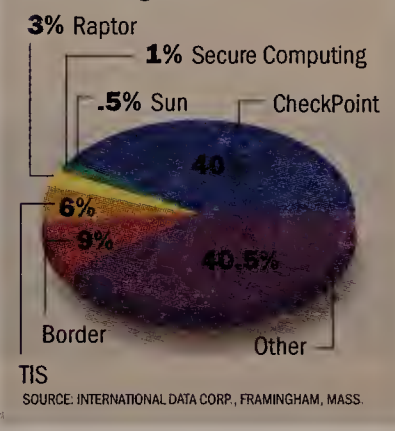
Secure Computing will integrate Webster's Web-filtering WebTrack software for controlling and monitoring access to URLs to its firewall line. Beseke added that Webster will continue to operate as a separate unit, licensing the technology to Web servers and competing firewall vendors.

Since the company started in 1989 as a spin-off of Honeywell, Inc., Secure Computing has had close ties to the military and the NSA.

But the company has steered clear of the stormy debate surrounding the government's effort to get vendors to build key-escrow into all encryption products. Secure Computing is likely to include key-escrow in future products, Beseke said. ■

Reshaping the firewall market

Through its planned acquisition of Border, Secure Computing will hold a 10% share of the worldwide firewall market, according to 1995 figures.



SOURCE: INTERNATIONAL DATA CORP., FRAMINGHAM, MASS.

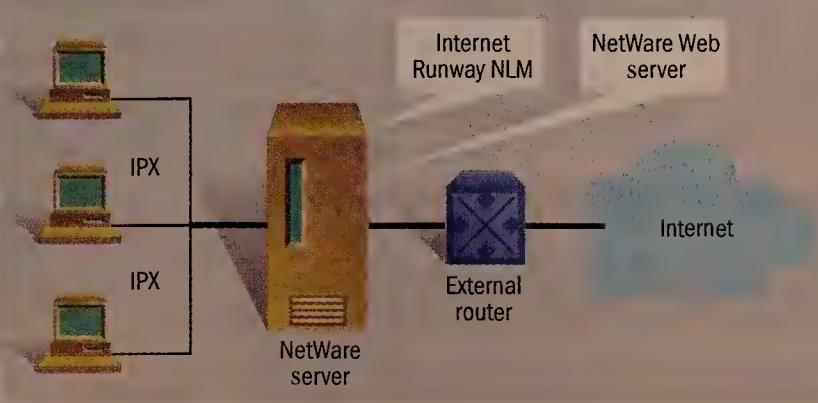
Start-up releases Runway product; NetWare clients gain 'Net access

By Carol Sliwa
San Jose, Calif.

Clients running on Novell, Inc.'s NetWare servers no longer need their own TCP/IP stack. Instead, a network administrator can simply install SphereLink Communications Corp.'s new Internet Runway software, the company claimed. The first software product off the line from the start-up, based here, installs as a NetWare Loadable Module on any NetWare 3.X or 4.X server that is running Web server software.

NETWARE CLIENTS REACH OUT TO THE 'NET STACK FREE

PCs access 'Net through a central server that contains the TCP/IP software.



Because all clients share a single IP address, companies are not only spared the expense of multiple Internet addresses, but they also gain firewall-like protection from the external threat posed by hackers.

"The NetWare clients are not visible to intruders out on the Internet," said Michael Graham, SphereLink's vice president of sales and marketing.

Companies gain the added benefit of reduced management costs since network administrators will not have to maintain dual protocol stacks at each client workstation, Graham added.

"With dual stacks, it takes up more memory," said beta tester Steve Earls, president of TechLynx, Inc., a newsletter publisher in Tuscon, Ariz.

For users, another benefit is instant Internet access using any TCP/IP WinSock Version 1.1 application. File Transfer Protocol, telnet and Netscape Communications Corp.'s Navigator browser come bundled with the Internet Runway NLM. The clients communicate with the Internet Runway NLM gateway via a WinSock Dynamic Link Library file and the NetWare IPX/SPX protocol stack. Internet Runway is available for five-, 10-, 25-, 50- and 100-user installations; costs range from $795 to $5,995.

Clients must be running Windows 3.1 or higher, Windows for Workgroups or NetWare Windows Workstation shell Version 3.21 or higher.

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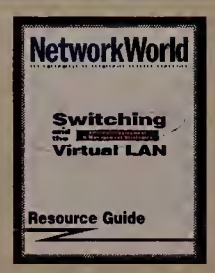

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On several of our NetWare 3.12 networks, after a period of several weeks, the response time and performance of the server drag considerably. Rebooting NetWare brings things back to normal speed for several weeks. Why does this happen?

Bryan Schneider, via the Internet

NetWare 3.X uses several different memory pools, which become fragmented over time by the loading and unloading of NetWare Loadable Modules (NLM), explains Ron Nutter, a Master Certified Novell Engineer and Groupware CNE in the Lexington, Ky., area.

When you reboot the server, the memory pools are reinitialized and defragmented. So, you can probably fix the problem by adding more memory, Nutter says.

Find the Monitor.NLM screen on the server, select resource utilization and then make sure the cache buffer is 60% or higher, Nutter recommends.

At a remote site, we used NetWare 4.1 to set up Nprinters. After about four months, we started getting a "printer out of paper" message even though that wasn't the case. When we unloaded Pserver, the message shifted to a different printer. We seemed to have solved the problem by deleting the object from NetWare Directory Service and then recreating it. How can I prevent this from happening again?

Jamil Niazi, Los Angeles city attorney's office

Make sure you've installed the latest version of the Virtual Loadable Module and network card driver at the workstation, Nutter says. You can also try adding this statement, "SPX CONNECTIONS 60," to the workstation's net.cfg file, he adds.

If you are running Windows 3.X, try using lpt1.dos for the printer port assignment. This forces Windows to go through BIOS to talk to the printer port, Nutter says. The regular printer port — typically LPT1 — tends to walk all over Nprinter in memory and cause the problem you describe, Nutter says. Try the 32-bit client for DOS/Windows.

Authentication and privacy headers coming to your network's IP packets

Proposed IETF standards promise to provide Internet Protocol-level security capabilities.

By William Stallings

Internet security can be found in many places on a network, from the host to the router to the firewall. The Internet Engineering Task Force would like it available with the Internet Protocol (IP) itself.

Toward that end, the IETF last summer published five security-related proposed standards — RFC 1825 through RFC 1829 — that define a security capability at the IP level.

IP-layer security encompasses two functional areas: authentication and privacy. The authentication mechanism assures that a received packet was, in fact, transmitted by the party identified as the source in the packet header and that the packet was not altered in transit. The privacy facility enables communicating nodes to encrypt messages to prevent eavesdropping by third parties.

Add a header or two

Support for these features is mandatory for the emerging next-generation IP, called IPv6, and optional for the current version, IPv4. In both cases, the security features are implemented as extensions that follow the main IP header. The extension for authentication is known as the Authentication header and the one for privacy is called the Encapsulating Security Payload (ESP) header.

The Authentication header provides data integrity and allows for the authentication of IP packets. It includes an identifier of a particular security association between two parties and an authentication data field, the contents of which depend on the authentication algorithm specified. The authentication data is calculated over the entire IP packet, excluding any fields that may change in transit.

The ESP header supports privacy and data integrity of IP packets. The header may contain parameters dependent on the encryption algorithm being used. In general, the first part of the header, including the security association identifier, is transmitted in unencrypted form, while the remainder of the header, if any, is transmitted in encrypted form.

Depending on the user's requirements, the ESP mechanism can be used to encrypt either a transport-layer segment or an entire IP packet. These schemes are called transport-mode ESP and tunnel-mode ESP, respectively.

Transporting or tunneling?

Transport-mode ESP is used to encrypt the data carried by IP. Typically, this data is a transport-layer segment, such as a TCP or User Datagram Protocol (UDP) segment, which, in turn, contains application-level data.

For this mode, all of the IP payload plus part of the ESP header is encrypted. An IP header is then tacked on to the beginning to form an IP packet. With the IP header unencrypted, the resulting packet can be routed through one or more networks to its destination.

Transport-mode operation provides privacy for any application that uses it. This mode of operation is also reasonably efficient, adding little to the total length of the IP packet. One drawback to this mode is that it is possible to do traffic analysis on the transmitted packets.

Tunnel-mode ESP is used to encrypt an entire IP packet. For this mode, the ESP is prefixed to the packet and then the packet plus a trailing portion of the ESP header is encrypted. This method can be used to counter traffic analysis.

Because the IP header contains the destination address and possibly source routing directives and hop-by-hop option information, it is not possible to simply transmit the encrypted IP packet prefixed by the ESP header. Intermediate routes would not be able to process such a packet. Instead, the entire block must be encapsulated with a new IP header that contains sufficient information for routing but not for detailed traffic analysis.

The transport mode is suitable for protecting connections between hosts that support the ESP feature. The tunnel mode, on the other hand, is useful in a configuration that includes a firewall or other sort of security gateway that protects a trusted network from external networks. In this latter case, encryption occurs only between an external host and the security gateway or between two security gateways. This relieves hosts on the internal network of the processing burden of encryption and also simplifies the key distribution task by reducing the number of needed keys.

Double whammy

The two IP security mechanisms can be combined. Encryption can be applied before authentication, or vice versa. With the former, the entire transmitted IP packet is authenticated, including both encrypted and unencrypted parts.

With the latter scheme, which is only appropriate for tunnel-mode ESP, the authentication header is placed inside the inner IP packet. This inner packet is both authenticated by and protected by the privacy mechanism.

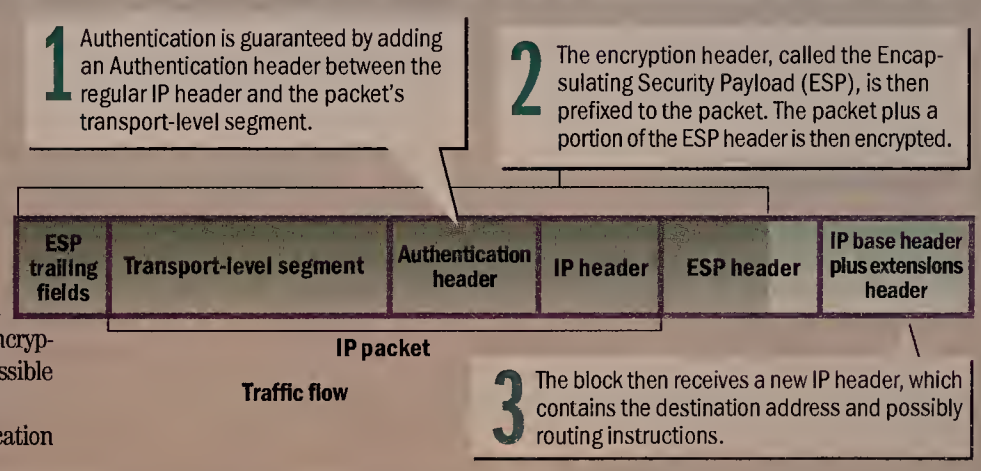
The use of authentication prior to encryption might be preferable for two reasons. First, since the Authentication header is protected by ESP, it is impossible for anyone to intercept the message and alter the Authentication header without detection. Second, it may be desirable to store the authentication information with the message and the destination for later reference. It is more convenient to do this if the authentication information applies to the unencrypted message; otherwise the message would have to be re-encrypted to verify the authentication information.

Stallings is an independent consultant and author of numerous books on networking. His latest is Data and Computer Communications, Fifth Edition *(Prentice Hall). He can be reached at ws@shore.net.*

UP CLOSE

With IP, authenticate, then encrypt

In the approach depicted here, the IP Authentication header is protected by the encryption payload, making it impossible for anyone to intercept the message and forge authentication without being detected.



EDITORIAL INSIGHTS

Does the intranet have legs?

Around these parts, we make a big deal about intranets — both in these pages and in our *IntraNet Magazine*. So I'm always surprised when someone asks, in more or less these words, "Aren't intranets just the latest fad that will fade out like client/server?"

The question is odd for a couple reasons. First, it assumes that the approach to distributed processing broadly labeled as client/server computing is dead. It's not, as the many companies in the midst of expensive client/server initiatives can attest.

More important, it indicates a lack of insight into the real power of intranets: That is, intranets will drive the entire IT industry to its next level by unleashing pent-up demand for networked applications. They will spawn a new market for packaged software and enable IS to deliver on longstanding promises.

For as long as we've talked about the network being the computer, there are precious few applications that help people work together more effectively over networks. (Name five off the top of your head. Bonus points if you can do it without counting Lotus Notes.)

Client/server was supposed to break that applications bottleneck but the fat-client aspect — desktops loaded up with lots of front-ends — complicated things. Deploying and maintaining client/server applications, like Notes or SAP AG's R/3, in a diverse computing environment is a real headache for many customers.

Intranets change that in two ways. One, they simplify and homogenize the desktop interface and access piece of the puzzle. But, more important, they give developers a single application platform to target: the intranet server. Freed from the complexity of supporting diverse clients and servers, developers can focus on delivering innovative functionality.

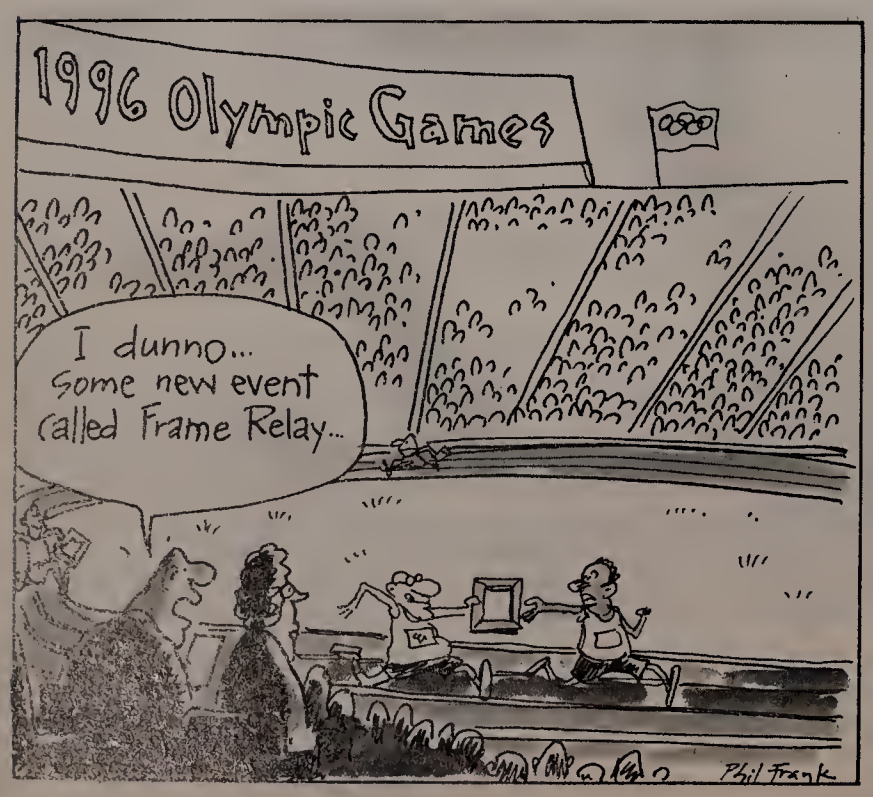
That's a vital point. Intranets will spark a resurgence in the applications market, much as the emergence of the personal computer did. And we need a thriving marketplace of network applications vendors if we're going to get the return we've expected on our network investments. The next few years will be an exciting, chaotic time as companies big and small race to deliver intranet applications. (Wall Street will love it.)

So, if you think intranets are a flash in the pan and just about putting up some Web pages, you've missed the point.

John Gallant, editor in chief jgallant@nww.com

Teletoons

By Phil Frank and Joe Troise
baba@sfgate.com



SPEAKING THE LANGUAGE

Server clustering trend takes an old idea and makes it better

Linda Musthaler

There's safety in numbers. That's the latest mantra from PC server vendors that are beginning to announce clustered server products.

AST Research, Inc., Compaq Computer Corp., Hewlett-Packard Co., IBM and Stratus Computer, Inc. are among the vendors developing high-end servers utilizing fault-tolerant, scalable clustering technology. These companies all hope to take a bite out of the mid-range and mainframe market by offering mainframe-like capabilities at a much lower cost.

Clustering technology is nothing new. IBM mainframes have used it since the 1970s. Digital Equipment Corp. made a name for itself in the 1980s with clusters of mid-range VAX computers, and Reduced Instruction Set Computing and Unix vendors have been in this market for years.

What is new is the movement toward the Wintel platform and the promise of cost-effective clustering aimed at the mass market.

Just what is server clustering, and why all the hoopla? The folks at Digital define clustering as "a loosely coupled set of systems that behaves [is addressed and managed] like a single system, but provides high levels of availability through redundant CPUs, storage and data paths. Clusters are also highly scalable, meaning that CPU, I/O, storage and application resources can be add-ed incrementally to efficiently grow capacity."

As the current darling of the PC server industry, Microsoft is working closely with hardware vendors such as Compaq, Digital and HP to deliver well-integrated network server platforms based on the clustering technology.

There are basically two approaches to server clustering. In the first approach, called failover, two or more servers work together to provide a system in which a secondary or backup server takes over processing for a primary server that fails, eliminating server downtime. This is most often achieved with standards-based interconnect technologies such as Asynchronous Transfer Mode, Fibre Channel, SCSI and 100M bit/sec Ethernet. Many early products coming to market take the failover approach.

The second approach, called scalable clusters, goes deeper into sharing internal resources. Scalable clusters let you add components incrementally to grow server capacity and to build in redundancy for higher availability. These clusters include technologies such as high-speed I/O interconnects for fast, flexible access to storage devices; software for cluster management; and workload distribution among multiple nodes in a cluster.

Server clusters are different from fault-tolerant systems, which typically employ passive standby components that remain idle until a failure occurs. Since the duplicate components go virtually unused, this approach to ensuring reliability can be quite expensive.

By contrast, a cluster uses active backup subsystems that perform normal, routine functions and are themselves primary servers for a given set of cluster resources. In short, the cluster approach lets you achieve high levels of availability while getting the most out of your computing resources.

Of course, this new breed of server requires a new breed of software specifically designed to take advantage of the shared resources. The Unix world has long enjoyed the complex operating systems that support server clustering. Now Microsoft Corp. and IBM are bringing the technology to the masses with versions of Windows NT Server (code-named Wolfpack) and OS/2 Warp Server.

Microsoft projects that the Wolfpack beta will ship in the third quarter of this year and will be commercially available early next year. However, it could be 1998 before Windows NT Server supports full cluster load balancing. IBM has not yet announced its Warp Server clustering delivery plan.

As the current darling of the PC server industry, Microsoft is working closely with hardware vendors such as Compaq, Digital and HP to deliver well-integrated network server platforms based on the clustering technology. This is important because server clustering is much more than just linked hardware; the OS and server management software are critical components, as well.

And then, what is a solution without optimized application software? Oracle Corp., Informix Software, Inc. and other database companies are racing to bring to market versions of their products that can fully exploit server clustering. Once these database application products are commercially available, organizations can develop much more failsafe, server-based applications.

It will be at least a year or two before all of the components — hardware, operating system and management software, and application software — are ready for prime time. Until then, we will see incremental improvements in products coming to market. Ironically, the goal seems to be to recreate something that we've had for decades: the reliability and scalability of the mainframe.

Is server clustering the right technology for your organization? If all you're doing on your network is file and print sharing and front-office productivity applications, then don't waste your money — you probably don't need the high reliability factor of the server cluster. But if you're implementing a truly critical application, or if you have numerous servers that you'd like to consolidate into one, then clustering might be your solution.

All of the major server vendors are planning or currently offering products. Contact your local sales representative, or check out your vendor's Web site for specific details on what's available now and the road map for the future.

Musthaler is vice president of research at Currid & Co., a Houston-based information technology consulting firm. She can be reached at (713) 789-5995 or via the Internet at linda@currid.com.

FRAME RELAY

Stick to true standards-based solutions

By Paul Wickre

The perfect world for every internetworking hardware vendor is to pay tribute to standards and then introduce product releases that spin into a proprietary architecture. This is what Cisco Systems, Inc. is attempting to do with DLSw+ and the revision, DLSw Lite, which was part of Cisco Systems, Inc.'s CiscoBlue announcement.

Both DLSw+ and DLSw Lite are essentially proprietary efforts for Cisco's branch router products. They are targeted at converting mission-critical SNA branch networks into router-based frame relay networks.

For users looking to implement frame relay, the key architectural consideration is the method used to attach to the carrier services.

For users looking to implement frame relay, the key architectural consideration is the method used to attach to the carrier services. Currently, users have two main attachment options: RFC 1490, an industry standard-based approach in which SNA is encapsulated directly into frame relay using a simple 16-byte header; or Data Link Switching, in which SNA is encapsulated into TCP/IP packets, then transported over frame relay.

RFC 1490 has been endorsed by frame relay access device (FRAD) vendors, IBM and the carriers themselves. DLSw has been endorsed by the router vendors, led by Cisco for the large remote branch access market.

This remote branch marketplace is essential to IBM's strategy and direction, as IBM's recent alliances with Cascade Communications Corp. and Sync Research, Inc. prove. These vendors offer both switching and FRAD products based on standards — in this case, RFC 1490. During frame relay's expansion and growth phase, users will require and depend on both standards adherence and vendor interoperability. DLSw+ and DLSw Lite for the large frame relay access market support neither goal.

Frame relay is a public network service driven by the carriers. To achieve economies of scale and simplicity in carrier operations, the methods used to attach to the carrier services must be standards-based, uniform and create very little overhead — like RFC 1490.

The economic implication of using DLSw+ or DLSw Lite — which generate, respectively, as much as five times and 2 1/2 times the overhead of RFC 1490 — affects both carrier and user costs. RFC 1490's simplicity allows a user to configure a branch network with a 16K bit/sec committed information rate (CIR) at a typical monthly charge of $31. In contrast, DLSw+ requires a 56K or 64K bit/sec CIR at a monthly charge of $101 to achieve the same response time. Multiply that $70 per month additional charge by 400 branches and you have a significant price differential.

DLSw Lite eliminates the IP session required by DLSw+ but still imposes additional overhead above that of RFC 1490. If a carrier adds, say, 10,000 user ports, the size of either the DLSw+ or DLSw Lite header relative to the average SNA message length being transported will require the carrier to reserve one to three T-3 circuits to support the additional overhead. Someone has to bear this cost; either the carrier raises rates or the user pays for a higher CIR.

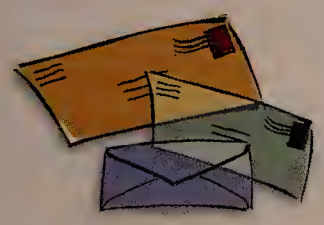
In addition, frame relay services are being aggressively deployed by the regional Bell operating companies within their operating regions. Several interexchange carriers (IXC) are leveraging the excellent price/performance of the RBOCs by using them as regional collector networks; the IXC then handles long-haul transmission. The short-haul (RBOC) and long-haul (IXC) networks are connected by the Frame Relay Forum Network-to-Network Interface (NNI) specification. This issue of interoperability between the carriers to further drive down user cost is most practically achieved with end-to-end RFC 1490 support, as opposed to a mix of vendor encapsulation methods.

As part of CiscoBlue, Cisco did announce some RFC 1490 products, known as LFRADs. However, these are LAN-based customer premises equipment, which do not incorporate the larger installed base of SNA controllers and terminals. Consolidate SNA plus the LAN traffic from the branch and you are back to DLSw in one of its forms.

Users' choice between the alternatives from Cisco and IBM will depend on their installed base of branch equipment and protocols used. Let the marketplace sort this out. But frame relay is being driven by the carriers, which require standards-based connection to their networks. For enterprises with large branch networks supporting transaction processing, standards-based frame relay via RFC 1490 is the only way to go.

Wickre is a principal and cofounder of Frame Relay Systems and Technology, Inc., a Washington, D.C.-based consultancy. He can be reached at (301) 718-1922.

MESSAGE QUEUE



Don't discount MCI

Regarding Liza Henderson and Tom Jenkins' article "Finding frame relay standouts" (June 17, page 51):

I'm an independent reseller authorized to sell MCI Communications Corp. data communications services. So I'm not suggesting I'm unbiased. However, I found it difficult to understand how Henderson and Jenkins could discount MCI so easily. They ignored the facts that MCI has the only frame relay network with a nationwide, fully redundant DS3 backbone (compared to AT&T's T-1), offers the lowest latency of any of the carriers, and allows for the greatest excess capacity above the committed information rate.

The authors also omitted MCI's service-level guarantee, which replaced a previous satisfaction guarantee last February. The previous guarantee allowed for customers to switch back to their old carrier at no charge if not satisfied. (Only one organization actually switched back.) MCI's current guarantee holds the carrier accountable for the highest level of performance and reliability by addressing the different aspects that measure service excellence, not just whether or not the service is functioning.

Mark Rubin
President
The Complete PC Environment
Minneapolis

Henderson and Jenkins respond: MCI's DS3 backbone was indeed a differentiator a few years ago. However, carriers such as AT&T, MFS Telecom Company, Inc. and LDDS WorldCom currently have DS3s on their backbones.

Latency for standards-based platforms is similar, and we have not seen test results that show MCI's performance to be significantly better than that of other carriers. If such test results exist, MCI did not choose to share them with us.

The service guarantees mentioned in the Buyer's Guide were simply examples of what customers can expect from carriers; they were not intended to be a comprehensive list of service guarantees from all carriers. A service satisfaction switch-back guarantee is not unique to MCI; as the article states, LDDS WorldCom also offers one.

All carriers were asked to provide details on the reimbursement offered when their guarantees are not met.

MCI did not provide specific details of its guarantee and associated reimbursements; however, we know MCI provides several service-level guarantees for their customers, and we compliment the carrier on this.

Overall, we do not "discount" MCI's frame relay service. In fact, we recognize its strengths and weaknesses.

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NetworkWorld PC WORLD

SERVER TEST SERIES

Good, bad and different

A monthly feature in which we evaluate file and application servers, based on tests conducted in a lab owned jointly with our sister publication, *PC World*.

By William L. Rinko-Gay and Lee Schlesinger

This month, we tackle three enterprise servers and one for the workgroup. The latter, the Aquanta ES from Unisys Corp., turned in the worst performance of all the servers we've tested to date. Its bargain-basement price, however, pushed it into our top five price/performance leaders.

Of the enterprise servers, the Data General Corp. AViiON AV 4900 and ALR Revolution Quad6 turned in very good performance numbers. We'd expect this of the first two servers we've tested based on Intel's Pentium Pro CPO.

The AViiON, however, is by far the most expensive machine we've looked at, making it a questionable value when judged by price/performance.

The Panda Project's Archistrat 4S failed to perform up to the standard of the other enterprise servers. However, its unique sleek design, which makes it a bit harder to maintain, may appeal to some sites whose servers are on display instead of locked behind closed doors.

AViiON AV 4900

VENDOR: *Data General*

CONTACT: *(508) 898-5000*

PRICE: *$62,125*

PERFORMANCE RATING: *51.1*

The AViiON AV 4900 houses four Pentium Pro processors on two cards in a large tower case. With three hot-pluggable power supplies for fault tolerance, there's no room for internal storage.

Drives are provided in an external enclosure called CLARiiON with dual redundant paths (two controllers in the AViiON, two controllers in the CLARiiON, two cables between the two) to the hot-swappable SCSI drives, which can be configured for RAID3 or RAID5. This high level of redundancy almost guarantees 100% hardware uptime. CLARiiON drives are easy to remove and insert.

A lower number indicates better value. The best ratio to date is 407 while the poorest is 1,215

Our performance testing on the AViiON turned up mixed results. As a file server and in our Notes tests, the machine lagged all the multiprocessing machines we've seen to date.

However, in the Oracle7 test, the AViiON turned in a strong second place showing, right after the ALR Revolution, indicating its utility as an application server.

Inside the AViiON, CPU and SIMM cards are easily accessible. As configured, the system was not very expandable, but there were already plenty of options installed, including both CLARiiON adapters and an internal modem.

The system has no hardware security features.

Data General bundles NT Alert with the system, a program that watches for problems and that can be configured with as many as three phone numbers to call when it finds a problem.

When you first boot your system, NT Alert calls the Data General support center to let them know you are online. With typical Data General service contracts, NT Alert can contact the company and request a service technician without even bothering you.

Setting up alert thresholds is not intuitive, however; you likely would have to count on your Data General field engineer to support that effort.

Data General also bundles in HP OpenView, an enterprise network management system.

PERFORMANCE LEADERS

Our performance rating is derived by adding the file server performance in scripts per minute to the average of the two application server test results at the 16-client level.

Enterprise servers	Issue tested	Top performance
HP NetServer 5/166 LS4	5/27/96	55.4
ALR Revolution Quad6 166/512	This issue	54.8
IBM PC Server 720	5/27/96	53.1
Data General AViiON AV 4900	This issue	51.1
The Panda Project Archistrat 4S Model 300	This issue	42.0
Workgroup servers		
ProLiant 1500 5/133 Model 2100	6/24/96	45.8
DEC Prioris XL Server 5133	4/22/96	41.5
HP NetServer 5/133 LH	2/19/96	38.6
AcerAltos 900	6/24/96	36.5
Dell PowerEdge SP 5133-2	5/27/96	32.3

VALUE LEADERS

We divide the price of the server as tested by the performance rating to get our price/performance index. A lower number indicates better value.

Enterprise servers	Issue tested	Price/ performance index
Tangent Carthage	5/27/96	407
IBM PC Server 720	5/27/96	518
HP NetServer 5/166 LS4	5/27/96	531
ALR Revolution Quad6 166/512	This issue	603
The Panda Project Archistrat 4S Model 300	This issue	747
Workgroup servers		
DEC Prioris XL Server 5133	4/22/96	143
AcerAltos 900	6/24/96	147
Dell PowerEdge SP 5133-2	5/27/96	161
Unisys Aquanta ES	This issue	173
Compaq ProSignia 500 Model 5/120-2100	2/19/96	175

SERVER TEST SERIES

CLARiiON management software presents a graphical image that can be used to create arrays, rebuild drives and perform other management tasks. The software is clear if you already have some familiarity with RAID managers. Data General also includes a program called Prophecy that analyzes drive performance and makes recommendations for changes in the CLARiiON configuration.

Software installation is handled by a Data General field engineer as part of the standard support contract. A competent engineer came out to our lab to get us up and running.

The prerelease documentation we reviewed was highly technical. This is consistent with Data General's desire to ship the AViiON to knowledgeable users, or to provide enough support that you don't need to take care of these things yourself. Data General provides sufficient drawings and tables to give you all the necessary information, if not in the most user-friendly manner. Data General provides 24-hours-a-day, 7 days-a-week phone support and a one-year standard warranty that sends engineers to your site if you have problems.

Revolution Quad6 166/512

VENDOR: *Advanced Logic Research, Inc.*

CONTACT: *(800) 444-4257*

PRICE: *$32,999*

PERFORMANCE RATING: *54.8*

If bigger were better, this would be the best server we've tested. But performance is the bottom line, and while the Revolution did well on our database tests, its performance was not stellar on our file server or Notes benchmarks.

The Revolution Quad6 is mammoth. It was nice of ALR to put wheels on the bottom so we could move it around without a cart. The vendor also markets a rack-mountable version.

A lower number indicates better value. The best ratio to date is 407 while the poorest is 1,215

Two lockable spring-latched doors on the front panel cover the diskette and CD-ROM bays at the top and nine bays currently configured in the optional hot-pluggable drive cage. Drives themselves are secured with levers and are easy to install and remove.

An LCD panel on the front of the server's case interacts with network operating system (NOS) software designed by ALR to provide feedback on processor activity, internal temperature and fan status, and system revision information. This complete status information can benefit people who need quick status information or systems whose display has become inactive.

Revolution has two removable side panels. Behind the panel on the left side are the processors. You open the panel on the right to configure drives and hot-pluggable cages. These two panels can be locked with a different key than the front doors. A configuration label on the door that covers the expansion slots makes it clear how to configure the unit — especially how to configure memory for maximum performance.

ALR provides a three-channel RAID adapter with 8M bytes of main memory. Each channel can connect to 16 SCSI devices. Adapter configuration software is ROM-resident, which means you can configure it without having to hunt for a diskette. This is a cool machine in more ways than one. It includes a fan on each PentiumPro processor, plus six more within the case. It also includes fully redundant power supplies.

ALR bundles its own NetTune for NetWare software with the server. This application allows you to analyze server utilization, network activity, disk activity, volume utilization and connections. You can also fine-tune NOS parameters. There is no similar utility for Windows NT nor is there any bundled program for software installation.

The server comes with a good quick-start glossy. The rest of the documentation is comprehensive, with a combination of ALR-specific manuals and OEM manuals.

Archistrat 4s Model 300

VENDOR: *The Panda Project*

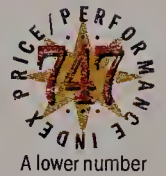
CONTACT: *(407) 994-2300*

PRICE: *$31,400*

PERFORMANCE RATING: *42.0*

The Archistrat 4S looks like it belongs on the bridge of the *Enterprise*. A button on the top of the unit causes a door to roll down revealing the diskette, CD-ROM and two externally accessible drives. A key removes a cover on the back to expose the backplane of the option cards and the I/O ports. Another key can then be used to remove the front bezel to access the internal drives, which are not hot-pluggable.

For all its futuristic design, we have to wonder about the value. Getting at the internal drives is very difficult. You have to disconnect the motor for that motorized front panel. The panel can't be locked, and it's on if the server is on. Then there's another difficult panel that has to be removed, inside of which are two fans that must be unplugged. After all this, you can finally get at the disk drives.



A lower number indicates better value. The best ratio to date is 407 while the poorest is 1,215

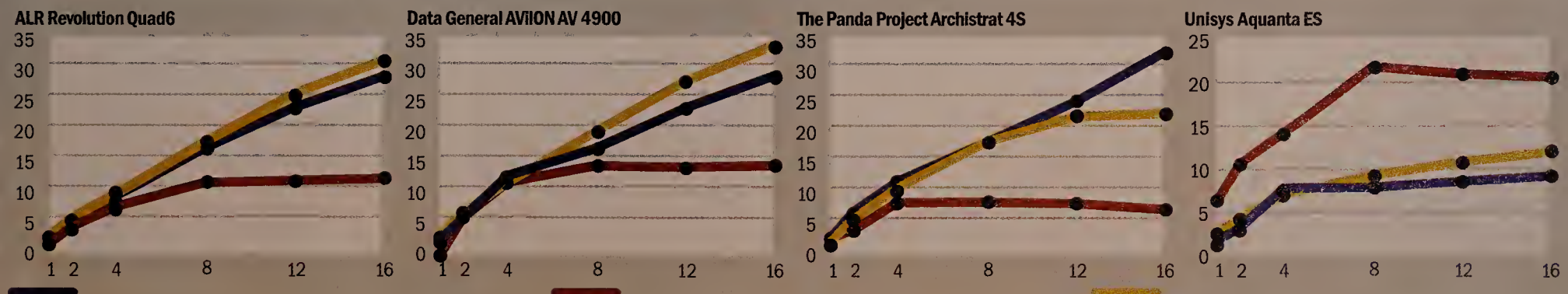
The adapter ports are at the top of the system, but the cables have to run down the side, which causes stress on the connection. In addition, the nature of the front bezel means you can't lay the chassis on the side to make connections when pressing option cards into the slots. We'd like to see what The Panda Project has in store for Archistrat: The Next Generation.

The machine we tested topped out for storage. A single external drive connected to the integrated Adaptec AIC-7870P SCSI adapter housed the OS/2, NetWare and Windows NT operating systems. Eight internal drives connected to a Mylex DAC960 two-channel SCSI RAID adapter, with four drives on each channel. The channels were duplexed, and the drives were spanned by the DAC960. Six fans plus the one in the power supply kept the unit cool.

The processor card contained 32M bytes of main memory. The rest of the memory is on proprietary cards using Panda's Compass connectors. These connectors use a post on the backplane that connects at four points on the card. This looks like a flimsy situation, but our

PERFORMANCE SUMMARY

We measure performance from the client's point of view, and report the time it takes to complete typical tasks. Our performance summary graphs show the results of each test in scripts per minutes, with numbers of clients ranging from one to 16. Because the tests run faster than a real client could perform the operations, each of our test clients stresses the servers as much as several real users would.

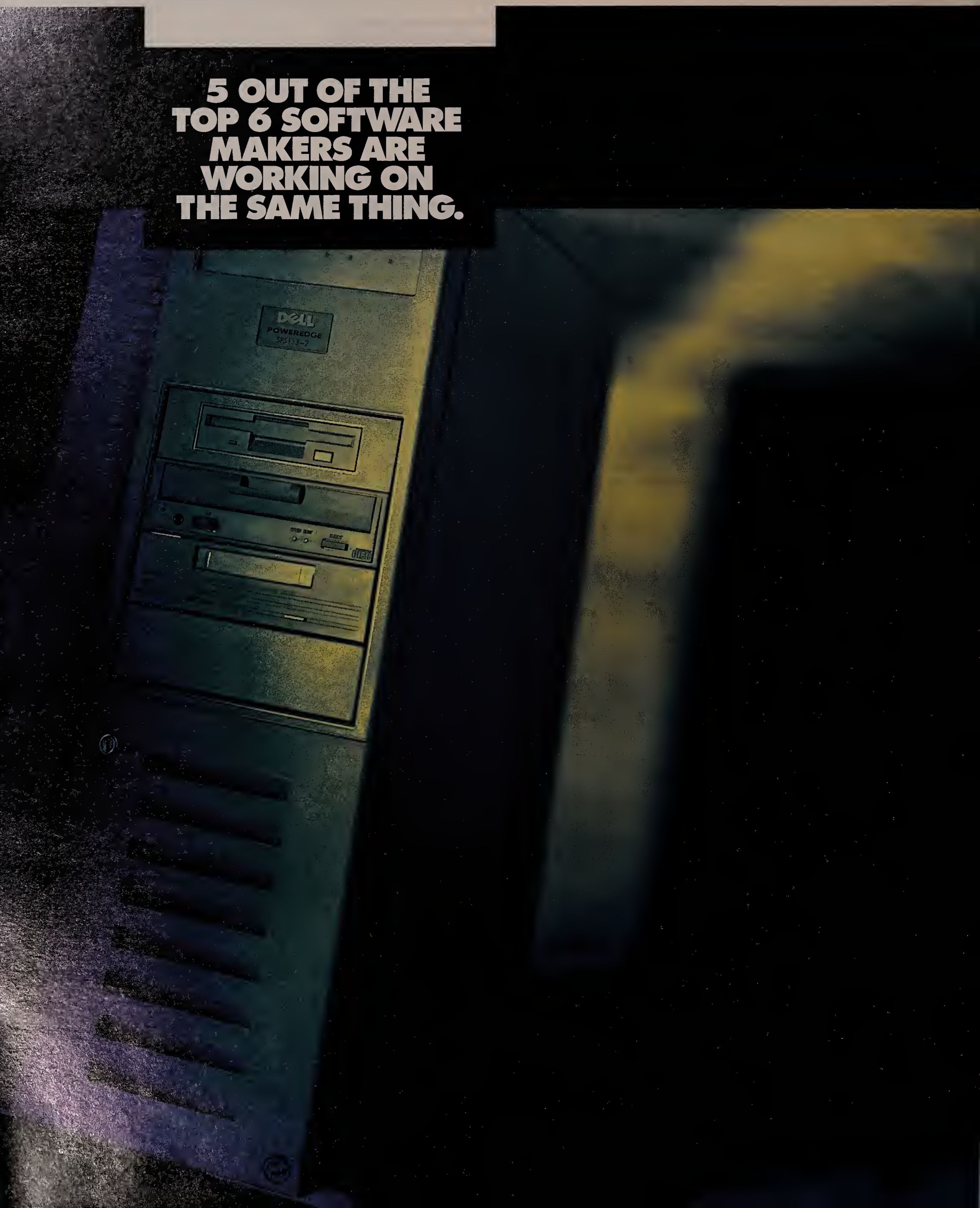


FILE SERVER Our file server tests run scripts on ascending numbers of clients for four applications: Microsoft's Word and Excel for Windows, Lotus' 1-2-3 for Windows and Corel's WordPerfect for Windows. The scripts perform file-access operations such as opening, importing and saving files.

DATABASE We have two application server tests. The first is a client/server database test that uses Microsoft Access on the front end and Oracle Workgroup Database 7.2 on the back end. We perform various read and write operations on a three-table payroll management application.

LOTUS NOTES The other application server test uses Lotus Notes Release 4.0. We access multiple views in a database, then each document within each view.

5 OUT OF THE TOP 6 SOFTWARE MAKERS ARE WORKING ON THE SAME THING.



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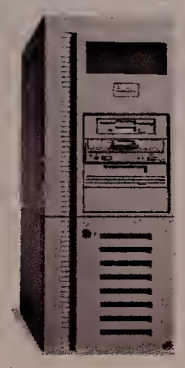

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pulling and re-installing of the cards did not cause any problems.

The processor and the I/O bridge are also on cards that connect to the backplane. According to Panda, this architecture can offer true 64-bit bandwidth to the memory cards and be updated to a 128-bit path in the future. Panda provides colored labels for the slots that match the colors of the cards you are installing. Unfortunately, the labels glued to the metal backplane were starting to show signs of peeling.

Download complete server test results and more details of our test methodology. Select NetRef, Buyer's Guides and Reviews, then Server Test Series.

Our server came with software installed. Panda took care to distinguish the software configurations of the application servers and the file servers. The DAC960 was set for 32K-byte striping when used for a file server and 8K-byte striping when used for an application server. NetWare was set with its block size to match the block size of the DAC960. Panda also set the Win32PrioritySeparation value to 0, which improves application performance. No other vendor has set this parameter.

There is no bundled software except for the drivers for the option cards. There is a lot of OEM documentation. Panda's owner's guide is adequate, covering most of what you need to do to maintain the server, along with decent drawings.

The inside story

	Advanced Logic Research, Inc. (800) 444-4257, www.alr.com		Data General Corp. (508) 898-5000, www.dg.com		The Panda Project (407) 994-2300, www.archistrat.com		Unisys Corp. (888) 278-2682, www.unisys.com	
Model	Revolution Quad6 166/512		AViiON AV 4900		Archistrat 4S Model 300		Aquanta ES	
Price as tested	$32,999		$62,125		$31,400		$4,505	
Processor	4 166-MHz Pentium Pro with 512K-byte Level 2 cache		4 166-MHz Pentium Pro with 512K-byte Level 2 cache		166-MHz Pentium with 512K-byte Level 2 cache		166-MHz Pentium with 512K-byte Level 2 cache	
Max. processors	4 200-MHz Pentium Pro with 256K-byte Level 2 cache		4 200-MHz Pentium Pro		1		166-MHz Pentium with 512K-byte Level 2 cache	
Memory	**As tested** 128M bytes (ECC)	**Maximum** 2G bytes	**As tested** 128M bytes	**Maximum** 4G bytes	**As tested** 64M bytes	**Maximum** 256M bytes	**As tested** 32M bytes	**Maximum** 256M bytes
Slots	**Provided**	**Open**	**Provided**	**Open**	**Provided**	**Open**	**Provided**	**Open**
PCI	7	2	6	2	2	0	2	1
PCI/EISA	1	0	0	0	4*	3*	1	1
EISA	7	7	4	0	0	0	5	5
Memory	0	0	0	0	0	0	0	0
Processor	0	0	2	0	0	0	0	0
ISA	0	0	0	0	2	0	0	0
Bays	**Provided**	**Open**	**Provided**	**Open**	**Provided**	**Open**	**Provided**	**Open**
Internal	9	0	0	0	12	4	6	4
External	7	5	3	1	4	1	4	2
Storage Adapter	ALR three-channel ADAC (AMI PCI SCSI RAID caching controller with 8M-byte cache)		2 SCSI-2 Symbios 8251D differential and CLARiiON storage processors		Integrated Adaptec AIC-7870P and Mylex DAC960 PCI controller		Adaptec AIC 7870P Fast SCSI	
Bus	PCI		PCI		PCI		PCI	
Capacity	9x2.15G bytes		18.9G bytes		18G bytes		2G bytes	
Model	Conner CRX2000D72		Seagate Barracuda ST12550N		8 Seagate Barracuda ST32550W and 1 Seagate Barracuda ST32550N		Seagate Barracuda ST31230N and Fujitsu M1606SAU	
Maximum drive capacity	**Internal** 36G bytes	**External** 224G bytes	**Internal** 0	**External** 5T bytes	**Internal** 48G bytes	**External** 0	**Internal** 40G bytes	**External** 0
CD-ROM	Sanyo CRD-254P 4X SCSI		Toshiba XM5401B 4X SCSI		Sony DCU76S 4+B15X		Toshiba XM-5401B 4X	
Network adapter	4 Cogent eMaster 110s		4 DEC 100M-byte Ethernet DE500s		Cogent eMaster/400		3Com 3C595 PCI 10/100	
Fault tolerance features	Hot-swappable cages (option-installed for test), RAID 5 controller (tested RAID 0) ECC RAM, redundant power supply		Redundant cooling and power, NT Alert to warn of alert situations, I/O failover to CLARiiON, RAID 5, hot-pluggable drives, redundant subsystems, mirrored write cache		RAID 5		None	
Security features	Chassis locks, user and supervisor passwords				Power-on password, administrator password, cover lock		User and administrator passwords, inactivity timer, keyboard lock	
Bundled software	ALR InforManager, NetTune for NetWare		HP OpenView for unit management, Array Manager for CLARiiON management, Prophecy for CLARiiON performance tuning, NT Alert		QAPlus/Pro		None	
Miscellaneous	5x12 + 9 hours Saturday toll-free phone support 5-year warranty on system, 3 years on installed peripherals; on-site service for $9.95 first year 4 fans on processor plus 6 other fans LCD touch-screen panel with system information Server is on wheels to make it easy to move		7x24 toll-free support 1-year warranty standard, other options Installation is part of the purchase. NT Alert can be configured to contact DG directly when alerts occur. DG does not expect these machines to be placed in unsecure environments.		Same-day support available for a price, 5x10 toll-free technical support 3-business-day warranty 7 fans		7x24 phone support 3-year warranty with 1-year on-site; 3-year on-site support option NetWare, Unixware, SCO Unix, OS/2 and Windows NT can be preloaded	

*Combination slots in Archistrat 4S are PCI/ISA

Aquanta ES

VENDOR: *Unisys*
CONTACT: *(888) 278-2682*
PRICE: *$4,505*
PERFORMANCE RATING: *26.0*

The Unisys Aquanta ES was a disappointment, with poor performance, no bundled software and no online documentation. However, with a rock-bottom price of $4,505, Unisys couldn't include many bells and whistles.

This system came configured with two hard disks, an operating system drive and a data drive.

The data drive is a Seagate Barracuda, which is known to be a pretty good performer, but it is not a Wide SCSI drive, which might have helped performance, as might have drive spanning.

In addition, the Fujitsu operating system drive may have hindered performance, even though it housed the NOS and not the data.

The server is in a minitower with room for five external drives and six internal ones. There is no security for the front panel or diskette drive, but there is a place to attach a securing cable to the chassis to hold the cover in place so components cannot be removed.

A lower number indicates better value. The best ratio to date is 143 while the poorest is 370

Inside, the server is carefully laid out for servicing. All slots, as well as SIMM and processor sockets, are easy to get to. There is a socket for upgrading to dual-CPU capability.

The internal drive cage can be completely removed after taking out three screws, making it easy to add and remove drives. The drives don't use rails; they screw directly into the cage.

The external drives use rails and require removing the bezel. The 3 1/2-inch diskette drive, however, is on a special tray that can be removed to make changing it as easy as changing one of the internal drives.

There is one large system fan and a fan in the power supply to keep the system cool.

A plastic guide for drive cables helps marginally with cable management. A configuration label on the bottom of the chassis provides all jumper switch settings.

There was no bundled software for network or server management with our review unit, let alone software of any kind. NetWare came installed, and we set up Windows NT with Service Pack 4 ourselves. We could not find any online documentation, either.

A hardware installation guide covers a family of Unisys servers. It covers all hardware setup and upgrade issues as well as how to deal with BIOS and EISA configuration, but does not deal with software issues at all. The document is very technical. ■

CALLING ALL VENDORS

We invite and encourage all vendors of file and application servers to participate in our Server Test Series. For information on how to be included, contact the director of the Network World/PC World Server Test Center, Bill Rinko-Gay, at (713) 376-8771 or bill_rinko-gay@pcworld.com

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NetworkWorld BROADBAND TICKER

Frame relay keeps the ticker humming

The Network World *Broadband Ticker tracks all the latest high-speed services. This quarter, ATM takes a backseat to frame relay and private-line news.*

By Beth Gage and Tom Jenkins

Welcome to the second edition of the Quarterly Broadband Ticker, a synopsis of the most important broadband events of the past three months. For each announcement, we assess its importance and give you the upshot concerning who can benefit.

Although the second quarter has been relatively quiet in terms of Asynchronous Transfer Mode service news (for a change), there has been the usual brisk activity in the frame relay arena and a fair amount of activity in private lines, especially Synchronous Optical Network (SONET)-based services.

FRAME RELAY

Event: AT&T announced frame relay access to its Internet service, WorldNet. With this option, AT&T frame relay customers gain the convenience of having a single provider for both services. AT&T provides a firewall to prevent outsiders from reaching your frame relay network via the Internet.

Upshot: If you are an AT&T frame relay customer with 56K bit/sec dedicated Internet access to an Internet service provider, you can eliminate that leased line with this option.

Even if you have to bump up your frame relay permanent virtual circuit (PVC) to compensate, this may save you some money.

Also, consolidating your Internet traffic onto your frame relay network may decrease management of the two different networks.

Event: GTE Corp. has added frame relay service in Alabama and made it available in more local access and transport areas in Illinois, Wisconsin and Texas.

Upshot: As well as offering more customers the benefits of frame relay service, the addition of these locations opens up the possibility of GTE rolling out Network-to-Network Interface (NNI) connections to other local exchange carriers (LEC) in more areas (outlined in the NNI section below).

Event: MCI Communications Corp. confirmed the delivery of several service options that were announced earlier this year, including electronic data interchange access, X.400 gateway access and PPP wireless access to frame relay.

Upshot: Connecting your legacy systems to the corporate frame relay network should be more straightforward with these service options. Wireless access is targeted for companies with mobile workers that might not always be near a phone.

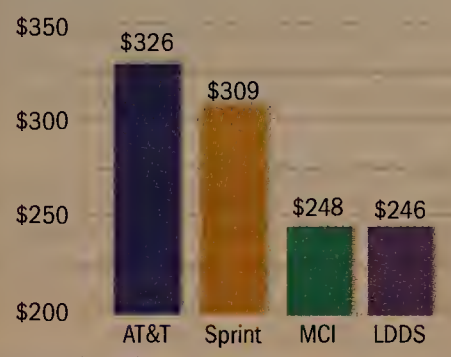
NNIs and service coordination

Event: BellSouth Corp. is implementing frame relay service coordination agreements with nine carriers, including interexchange, regional and independent telephone companies. These agreements help define procedures for installing NNI connections between BellSouth and the other carriers.

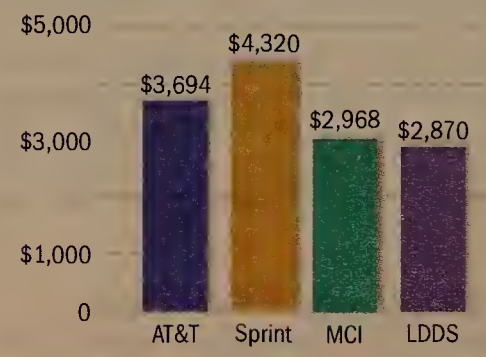
Upshot: By defining the process and working closely with these carriers, the installation process should be smoother and you can expect fewer surprises when ordering service.

THE BROADBAND TICKER FRAME RELAY PRICING PICTURE

Prices are for a fully subscribed 56K bit/sec access port with a single one-way simplex PVC at 56K bit/sec CIR.



Prices are for a fully subscribed T-1 access port with 24 one-way simplex PVCs, each with a CIR of 56K bit/sec.



SOURCE: TELECHOICE, VERONA, N.J.

However, this does not do away with the need to receive two separate bills, but it should give you an added level of confidence that installation will go more smoothly.

Event: Along a related line, GTE has signed agreements with BellSouth and SBC Communications, Inc. that resemble co-purchasing arrangements. The agreements have GTE and the respective carriers building NNI connections between their service areas within a particular LATA. These give customers that have some locations in GTE territory and some in the Bell company territory the ability to order frame relay service from the LEC and slot PVCs across the public NNI connection.

Upshot: Although these arrangements do not extend to a single service invoice (meaning you'll get a bill from each carrier), it does extend frame relay coverage in GTE's service areas. This also sets up the future possibility for GTE to offer interLATA service with similar arrangements.

Event: BellSouth filed a 56K bit/sec NNI tariff.

Upshot: Be careful here. Low-speed NNI connections offered by any carrier have increased serialization delay, which is more noticeable at 56K bit/sec than at 1.5M bit/sec, and network performance may be adversely affected.

Event: US WEST, Inc. is acting as the single point of contact on an individual case basis for customers using NNI connections. With this option, the customer pays US WEST to act as its agent in installing, managing and maintaining the end-to-end network with its interexchange carrier.

Upshot: If you have a large network in US WEST territory and a nationwide frame relay network, this may be a good way to off-load some of the network management.

SNA over frame relay

Event: Pacific Bell, in conjunction with its integration arm, Pacific Bell Network Integration (PBNI), announced that its frame relay service, FasTrak, will now support SNA. The offering will consist of several packages that address equipment and transport requirements for customers with SNA networks.

Upshot: Initially, managed frame relay access devices (FRAD) and managed router services will be offered through PBNI, and customers may choose FRADs from Sync Research, Inc. and Motorola, Inc. or routers from Cisco Systems, Inc., Bay Networks, Inc. and IBM. Toward the end of the year, Pacific Bell will also add prioritized PVCs for SNA applications.

If you're in the process of consolidating your LAN and SNA traffic onto a new frame relay network, and you don't have time to learn the ins and outs of frame relay customer premises equipment (CPE), then the assistance that comes with managed FRAD or router services might be worth consideration. Service installation should be smooth with these options because interoperability and installation processes are coordinated between the integration arms and the LEC.

NO SURPRISES WITH PACBELL

Pacific Bell has defined service-level agreements that characterize its frame relay network performance. Here's the upshot:

- A data delivery rate of at least 99.5%.
- No financial penalties for failing to meet data delivery objectives, but the carrier will provide an expected service level.
- A "best effort" quality of service level for customers that have oversubscribed their ports.
- A "guaranteed" quality of service level for customers with subscription rates at or below 100%.
- Service levels are unrelated to pricing; they merely serve to set reasonable customer expectation levels given network design.

Pricing, discounts and guarantees

Event: MCI announced changes that reposition its frame relay pricing in the marketplace. MCI has increased the basic port charges but has lowered the minimum monthly usage charges and also monthly maximums. The usage charge per megabyte has not changed. These changes will affect all HyperStream Frame Relay customers beginning in August.

Upshot: If you've been holding off on building a meshed frame relay network because of the cost of adding more PVCs, now is the time to reassess the idea. This new strategy makes it far cheaper to add PVCs at existing network locations, optimizing your network design to match actual data traffic patterns.

Event: Ameritech Corp. recently filed its frame relay service with the Federal Communications Commission, which resulted in public pricing for its frame relay customers. Basic Service, which is tariffed, offers five port speeds, fixed-rate PVCs and zero committed information rate (CIR) PVCs. Pricing is based on the CIR, not the size of the port. Ameritech Advanced Data Service, the telephone company's unregulated entity, continues to offer Enhanced Services, which include monitoring and equipment on a case-by-case basis.

Upshot: Now that basic service pricing is public, it is easier to compare existing private-line solutions with frame relay service pricing. If you're still using Ameritech private lines, now is a good time to assess whether frame relay is a more attractive option.

Dial access

Event: LDDS WorldCom announced the availability of its analog dial access solution, which leapfrogs other carrier dial options in terms of simplicity. The carrier is supporting up to 28.8K bit/sec access to the frame relay network via either 800 or local dial access (available in 62 cities). Customers dial in to a T-1 or T-3 shared frame relay gateway port, depending on the volume in that service area. LDDS WorldCom sets up a PVC from the gateway port to your main location, sized according to the number of simultaneous users expected to dial in to the network.

Upshot: Both options provide domestic access, and are simply priced — 15 cents per minute for 800 dial, and 7 cents per minute for local dial. Strictly usage based, there are no additional port or CIR charges for dial users.

Analog dial access can be attractive for mobile workers, small offices and local-loop recovery. Using this option, a new network location can be installed quickly — in a few days — rather than waiting on the local access installation for dedicated access. The offering is unique in its simplicity, ease of use and competitive rates.

High-speed frame relay

Event: LDDS WorldCom is alpha-testing inverse multiplexed access — NxDS1 — to high-speed frame relay services and plans to make the service generally available later this year.

Upshot: This will be a boon if you need access links between 1.5M and 6M bit/sec. Today, if you want a high-speed port, T-3 is the only game in town, but that's overkill for many users.

Event: MCI announced it is now supporting high-speed PVCs, up to 1.536M bit/sec, for users with high-speed frame relay ports. Other service providers only support up to 1.024M bit/sec PVCs.

Upshot: The main benefit of the increased PVC speed is decreased serialization delay. If your network is about to outgrow frame relay, you should consider upgrading key network locations to high-speed ports.

Event: Local carriers are beginning to enter the high-speed arena. Bell Atlantic Corp. is now offering ports that range from 6M to 45M bit/sec. The carrier is also offering a 45M bit/sec NNI for very large business customers. BellSouth is offering high-speed links on an individual case basis. GTE has one customer in Tampa, Fla., using T-3 frame relay.

Upshot: If you are in any of these territories and your frame relay network has sites that are hitting the 1.5M bit/sec ceiling, high-speed frame relay should be more cost-effective than multiple T-1 ports. And it will be easier than undertaking a migration to ATM.

PRIVATE LINES

Event: Sprint has completed the first SONET ring between the U.S. and international locations. The facility connects Springfield, Mass.; Buffalo, N.Y.; Montreal; and Toronto. Apparently, the installation was completed none too soon — a washout near some railroad tracks severed the cable within four days of its completion. The carrier reports that service was restored within milliseconds. On target with its service delivery timetable, Sprint has completed 43 SONET rings throughout the U.S.

Upshot: This is worth checking out if your international Canadian private-line contracts are up for renewal and you need a highly resilient service.

Event: AT&T has introduced Accunet SONET Multiplexer Service. This option has an add/drop feature for its SONET 155 Service, which allows customers, to split out or combine lower level services at points along a 155M bit/sec circuit.

Upshot: This will be useful if you are managing a 155M bit/sec private-line network and need access to lower speed circuits, such as T-3 or T-1, for network reconfiguration.

Event: LDDS WorldCom has announced new pricing for its international private-line services. International private lines are typically cumbersome to price, consisting of three different components: the domestic portion, which carries a circuit from a domestic location to an international gateway city; the U.S. portion, which is a charge between the gateway city and the middle of the international circuit; and the international portion of the circuit, which takes you the rest of the way to the end location.

Upshot: With this new approach, LDDS WorldCom has combined the first two segments into a single segment. To make the pricing even more manageable, the U.S. is divided into zones and international locations into tiers. There is a single-page pricing matrix for service from any U.S. zone to any international tier.

If your international circuits are up for renewal, it's probably worth the limited effort it now takes to evaluate what LDDS WorldCom has to offer.

Event: AT&T in May introduced a new service-level guarantee called En-

Network World Broadband Ticker roundup

What's new	Who's announcing	Who's been there
Frame relay		
SNA service	PacBell	Cable & Wireless, Sprint, CompuServe, MCI
ISDN dial access	No announcement	MCI, Sprint, AT&T
IP gateway	No announcement	Sprint
Analog dial access	LDDS WorldCom	AT&T, MCI, Sprint, Cable & Wireless
High-speed ports	Bell Atlantic, BellSouth, GTE	MFS Datanet, MCI, LDDS WorldCom
High-speed PVCs	MCI	
Pricing changes	MCI	LDDS WorldCom, AT&T
Service guarantees	No announcement	Sprint, AT&T, MCI, LDDS WorldCom
Multicast	No announcement	US WEST
Disaster recovery	No announcement	AT&T, MCI, LDDS WorldCom Sprint
CPE solutions	No announcement	AT&T, MCI, Sprint, Pac Bell, Bell Atlantic, MFS Datanet, CompuServe
Wireless access	MCI	
NNI service mgmt.	US WEST	
SMDS		
NxDS1 access	No announcement	BellSouth, MCI
ISDN access	No announcement	Ameritech
Analog access	No announcement	Ameritech
Billing upgrades	No announcement	MCI
National connections	No announcement	MCI and BellSouth
ATM		
Voice over VBR	No announcement	MFS Datanet
T-1 ATM	No announcement	ATT&T, MCI, Sprint, LDDS WorldCom, CompuServe
Fractional T-3 ATM	No announcement	LDDS WorldCom, Sprint, MFS Datanet, CompuServe
T-3 ATM	No announcement	AT&T, MCI, LDDS WorldCom, Sprint, US WEST, MFS Datanet, CompuServe
OC-3 ATM	Bell Atlantic	MCI, Sprint, US WEST
Frame relay service interworking	No announcement	AT&T, Sprint
Usage-based pricing	No announcement	Sprint
ABR class of service	No announcement	LDDS WorldCom, CompuServe
CBR class of service	Bell Atlantic	AT&T, Sprint, MCI, LDDS WorldCom, US WEST
UBR class of service	No announcement	MCI
VBR class of service	Bell Atlantic	AT&T, MCI, LDDS WorldCom, Sprint, US WEST, MFS Datanet, CompuServe
ATM market trials	No announcement	BellSouth, PacBell
NxE-1	MFS Datanet	

"Can we do business on the Internet without getting

bamboozled

by some wily hacker?"

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To learn more about IBM SecureWay and our secure transactions technology, visit us at www.ibm.com/security or call 1 800 IBM-7080, ext. G122.

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hanced Reliability Option (ERO). It guarantees monthly DS1 and DS3 end-to-end circuit availability of at least 99.999%.

AT&T will credit customers one month's recurring charges if service is down for a total of five minutes in a given month. ERO will be priced at a 20% premium compared to standard Accunet services.

Upshot: Unless you are experiencing chronic service problems, this is probably not worth the 20% premium, especially given the fact that you'll have to monitor your own network to determine service downtime.

Event: MCI has also introduced a service guarantee dubbed Premium Network Assurance (PNA). Offered to DS0 and DS1 private-line customers, PNA has an availability target of 99.99%. It is priced at about 25% above standard private-line service.

Although there are no predefined penalties or credits established for reimbursing customers if the target availability is not reached, the carrier is working on establishing guidelines for service credits.

Upshot: Don't consider this unless you are willing to negotiate MCI's penalties for missing its availability target and have the watchdog resources to verify whether that performance level was met.

SONET STYLINGS

Here's some recent Synchronous Optical Network (SONET) deployment events:

- AT&T will complete three OC-48 SONET rings by year-end.
- AT&T is on schedule to have a coast-to-coast SONET implementation by the end of 1997.
- MCI currently has 12 local SONET rings in the U.S.
- MCI plans to focus on regional SONET rings during the next six to 18 months.

ATM

Event: Bell Atlantic announced it will be offering cell relay service later this year as part of its All@once Solutions service. Both constant bit rate and variable bit rate classes of service will be available. The cell relay service will feature flat-rate pricing, without any mileage or usage charges. Customers will be able to access the network via either direct-fiber or SONET facilities.

Upshot: Since Bell Atlantic is also offering high-speed frame relay, it may pay to compare costs between the two services if your applications are mostly data.

If your private-line contract is expiring later this year, you will now have some service alternatives that should be explored.

Event: MFS Datanet, a division of MFS Communications Company, Inc., announced the availability of NxE-1 ATM to overseas locations. The service provider continues to offer the only international presence in ATM.

Upshot: If you have overseas locations in London; Frankfurt, Germany; Paris; or Stockholm, Sweden, you may get some cost savings from consolidating your overseas network onto an ATM infrastructure.

ON LINE

Check out last quarter's Broadband Ticker, which includes a more general discussion on how to evaluate new high-speed offerings, on Network World Fusion. You'll also find links to sites that'll help you bone up on frame relay, ATM and SMDS technology. Select NetRef, Technology Resources then Broadband.

http://www.nwfusion.com

A look ahead

Since NetWorld+Interop 96 Atlanta falls right at the end of the third quarter, we are predicting an onslaught of service announcements and a lengthy Ticker next quarter. Several carriers are planning frame relay-ATM service interworking announcements, as well as more frame relay enhancements.

Stay tuned for the latest in broadband news!

Gage and Jenkins are broadband consultants with TeleChoice, Inc., a Verona, N.J.-based consulting company. They can be reached at bgage@telechoice.com and tjenkins@telechoice.com or at (918) 274-0251.

"Now that my
company is on
the Internet,
will a fancy
port scanner
algorithm make
of my
firewall?"

mincemeat

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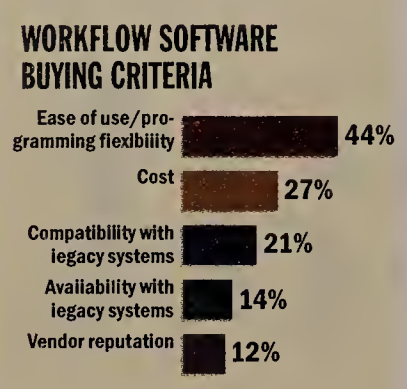
Briefs

An **Association for Information and Image Management (AIIM)** *survey finds that application development and usability issues are becoming the predominant factors IS managers consider when buying workflow management software. The finding is based on a survey of 500 users that was conducted for AIIM's* **Workflow: The State of the Industry** *report.*

According to the survey, IS managers are most interested in workflow software for the promise it holds for improving business processes.



The full report is available under the reference catalog number of D055, and costs $100 for AIIM members and $130 for nonmembers.

AIIM: (301) 587-8202.

Users can get a 'Sneak Peek' at Green River

Novell to make history by offering customers training courses prior to the release of its latest version of NetWare.

By Kathy Scott

Novell, Inc. is taking a proactive step in getting its customers up to speed on NetWare 4.11, which is code-named Green River and is currently in beta testing.

The company says that, for the first time in its history, it will offer training courses on a product that has yet to be released to the market. Novell's Green River Sneak Peek program consists of two courses, one that will help customers unfamiliar with NetWare 4 grasp the essentials required to understand Green River and one that will aid current NetWare 4 users in migrating to the new version.

Novell says it is offering the training to meet demand that is bubbling up from customers. Analysts have a different take, however.

Tom Kucharvy, president of Summit Strategies, Inc., a market strategy and consulting firm in Boston, says there is so much skepticism about Novell and its products that the company has to do whatever it can to keep its customers loyal.

"Novell is in big danger; there is no question about that. If Green River does not generate a lot of market interest and a lot of sales shortly after it is released, there is going to be a downward spiral because people are going to see it as a further lack of commitment to NetWare," according to Kucharvy. "It is going to generate increased skepticism and more likelihood of a shift to [Microsoft Corp.'s] Windows NT."

Green River pretraining

Even before you can buy the next release of NetWare, you can learn from Novell about its:

- Symmetric multiprocessing
- Integrated TCP/IP support
- C2-level security
- Advanced network printing capabilities
- Network migration and installation functionality
- New graphical administration tools for improved network and Novell Directory Services management

According to Jon Oltsik, computing strategy service analyst with Forrester Research, Inc. in Cambridge, Mass., Novell is proactively marketing Green River knowing that customers are questioning its long-term strategies.

He sees Novell defending its turf. "They have to keep advancing the NetWare ball because NT is getting so much publicity. So anything they can do to get in the news is good news for them."

Ram Tackett, an industry analyst with the consulting firm Currid & Co. in Houston, says Novell needs to beef up its training efforts if it is to succeed with its strategy of bringing NetWare into a more distributed, open environment by having Green River make more use of IP than IPX.

"Novell is trying to reshape itself as an Internet services type of company, and this whole change of pace is going to require some training," Tackett says.

Furthermore, Novell is trying to make agreements to get its Novell Directory Services to run on other platforms such as NT, Unix and some IBM operating systems, Tackett says.

This is going to require a mind-shift change, and the more Novell can lay a path for users, the better off it will be, he adds.

The training courses are scheduled to begin on Aug. 12 at selected Novell Authorized Education Centers throughout the U.S.

Prerelease Course #519pr NetWare 4 Green River First Class introduces Green River features and functionality to individuals who are also new to NetWare 4. Users interested in moving to Green River after completing this course are encouraged to take additional training for migrating first from NetWare 3 to NetWare 4.

The additional training can be obtained by taking three other courses — beginning with Course #526, NetWare 3 to NetWare 4 Update — which are scheduled over an eight-day period, says Quinn Sutton, business planning manager for Novell Education.

Those courses will give users complete information on how to install, configure and maintain NetWare 4 and Green River along with training on NDS, one of the significant technology differences between NetWare 3 and NetWare 4.

Current NetWare 4 users or those who have completed Novell-authorized NetWare 4 curriculum can take Prerelease Course #527pr NetWare 4 to Green River Update Seminar. This course will cover all of the additional features and functionality of Green River, along with demonstrations of how those functions can be used.

Cost for either of the one-day prerelease courses is $149 and includes a two-user beta copy of Green River.

✆Novell: (800) 247-8731.

Coming soon to a city near you

The Green River Sneak Peek program will be offered in these locations:

Albuquerque, N.M.	Milwaukee
Boston	Newark, N.J.
Charlotte, N.C.	New Orleans
Charleston, W.Va.	New York
Chicago	Philadelphia
Columbus, Ohio	Phoenix
Denver	Pittsburgh
Detroit	Portsmouth, N.H.
Harrisburg, Pa.	Raleigh, N.C.
Hartford, Conn.	Richmond, Va.
Houston	Sacramento, Calif.
Lexington, Ky.	San Antonio, Texas
Little Rock, Ark.	San Jose, Calif.
Los Angeles	Tampa, Fla.
Madison, Wis.	Wichita, Kan.

MANAGEMENT DATA ONLINE

Network World peruses online services for interesting tools or tips that will make your job easier or help you to better manage your career. Here are a few:

Your career companion

E-Span, Inc. has launched its new Career Companion Web site, which is organized into six different areas that point you to 4,000 resources on the Web and other online services.

You can scour the site to find links to career management aids such as skill assessment tools and services that help in researching potential employers. If you want to further your education, the site helps you locate data concerning educational trends, degree requirements and financial aid. There is even an area where you can find resources for improving your personal life.

Resume-O-Matic

Another site on the Web, Your Personal Network, offers Resume-O-Matic, a service that creates an HTML version of your resume using information you put into an online form. The resume is then posted on the site free for one year.

However, until the release of an improvement that enables site visitors to search the full text of all resumes, you'll have to give out your resume page address to potential employers. Other improvements being worked on include an automatic mailer that will let you send electronic mail copies of your resume to targeted industry leaders and the ability to choose from different resume formats.

A virtual library

High Technology Careers Magazine maintains a library and career resources area on its Web site that gives you access to reviews of a number of other career sites. The area also provides access to a searchable database of the magazine's articles that cover a wide array of topics from developing project management skills and managing stress on the job to recognizing and managing conflict, and how to run effective meetings.

The library and career resources area also provides access to a Computer Resource Center, which maintains links to sites where you can download programs — mostly shareware, freeware or demos — for PC, Macintosh and Unix environments.

You can use Network World Fusion as your launching pad to the Web sites mentioned here. Select Careers and look for Management Data Online for links to the sites.

Network World Fusion
http://www.nwfusion.com

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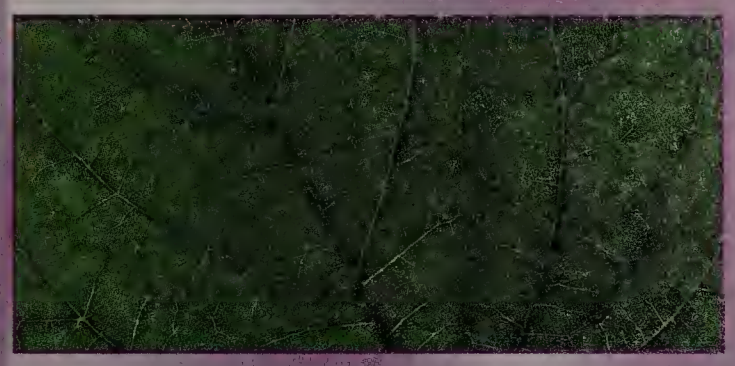

The concept of networking has some very natural roots. But in today's business world, no company is delivering healthier results than Bay Networks. Whether it's seamless communications, global connectivity or real-time data sharing, our switched internetworking products are enabling businesses and individuals not just to share ideas — but to grow in new ways.

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Los Angeles, CA; Raleigh, NC; New York, NY; Phoenix, AZ; Westboro, MA

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SALES

Systems Engineers

Various U.S. locations

Work with a Sales Representative to facilitate sales in a given territory or account. Provide pre- and post-sales support including product presentations, demonstrations, network designs, writing proposals and customer support. An extensive background in the design, installation, operation, maintenance and management of medium to large-scale data networks at the physical data link and network layers of the OSI model is essential. ATM expertise and thorough knowledge of networking standards, protocols and switching highly desired. **Dept. MM/SE**

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Various U.S. locations

Sell products into major, end-user accounts by creating and expanding account relationships through constant contact. Meet sales quota by successfully selling into new areas of major accounts as well as expanding business in existing areas. Gather and assimilate customer network hardware and software data, evaluate the data, and recommend the appropriate products to effect solid solutions. Requires solid data communications sales experience with large corporate accounts, excellent technical translation skills, and the ability to make presentations to executive level decision makers as well as technical operations personnel. Some knowledge of each of the following networking standards and protocols is also essential: Ethernet, Token Ring, FDDI, Fast Ethernet (100BASE-T), ATM, switching, routing, UNIX, SNMP and RMON network management. Knowledge of OSPF and RIP highly desirable. Must be willing to travel locally and some overnights based on various locations of major accounts. **Dept. NW/ESR**

Please send a resume, referencing the department code, to Human Resources, Bay Networks, Inc., 8 Federal Street, Billerica, MA 01821; Fax (508) 436-3510; EMail: baynetworks@isearch.com (send text only). Please check out our web site for a complete list of openings: http://www.baynetworks.com/corporate/employment/ We are proud to be an equal opportunity employer.

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Supports the development of Cox's high speed residential data service. Participates in the design and definition of Cox's data networks, including LANs, Back Office architectures, and WAN interfaces. Responsible for design and operation of local network management system. Assists with interfaces to existing billing and customer care systems. Innovates new methodologies for supporting the data business. Works with Plant engineers in ensuring proper activation and operation of cable modems. Atlanta position involves travel. Involves exposure to RF principles and techniques.

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Please send resume by email to highspeed@cox.com. Resume can be text or Word format (uuencode or binhex only). Indicate which location. More info on Cox & cable modems can be found at:

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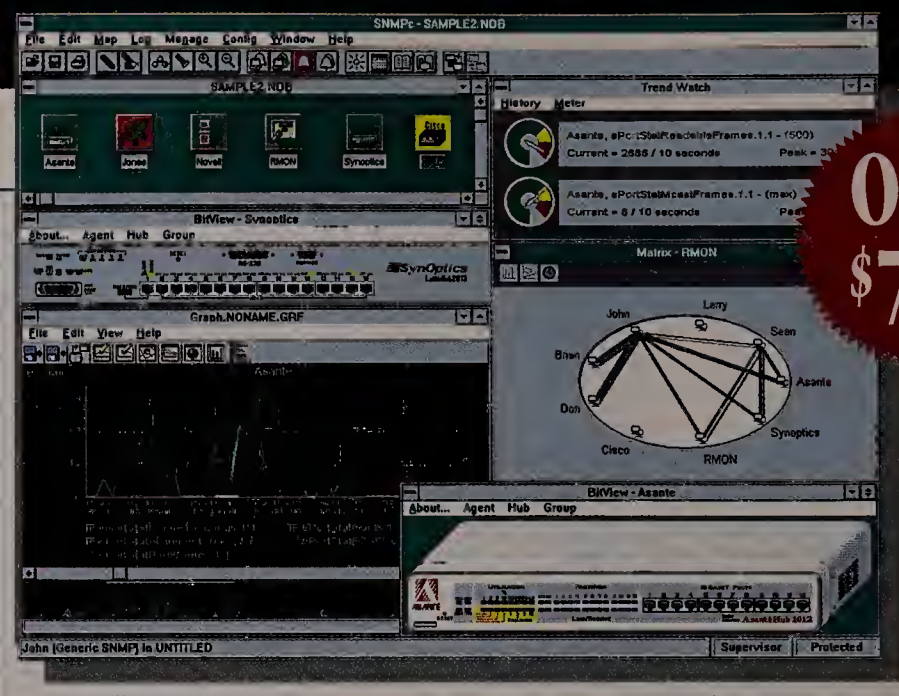
SNMPc

Network Manager for Windows



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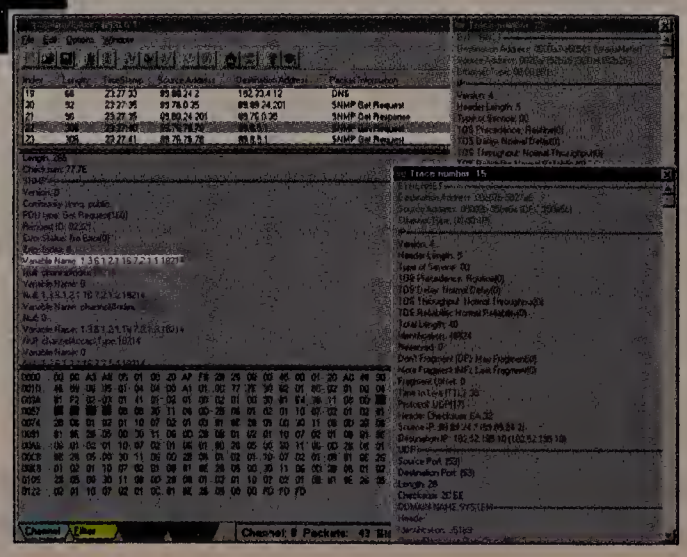

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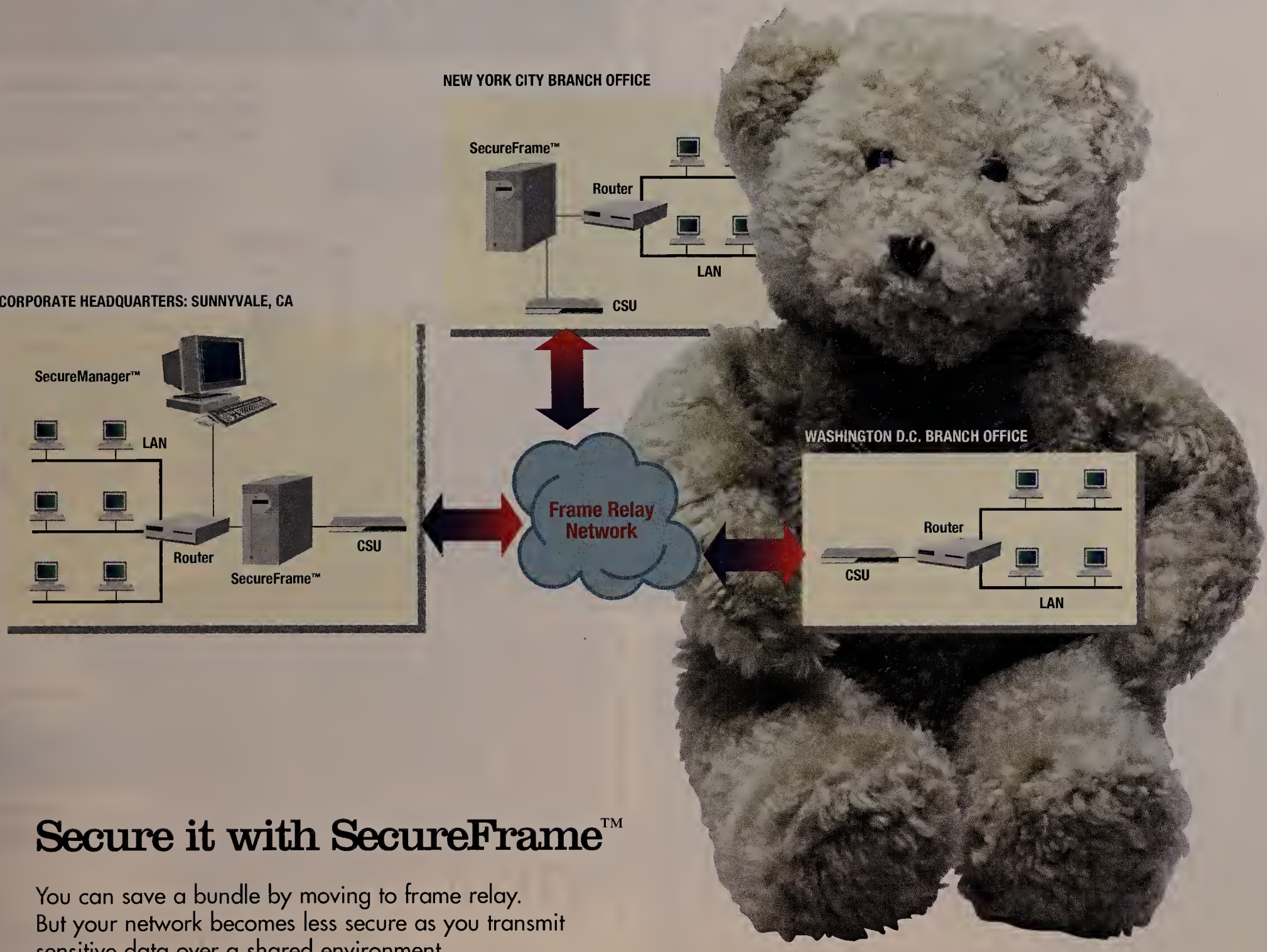

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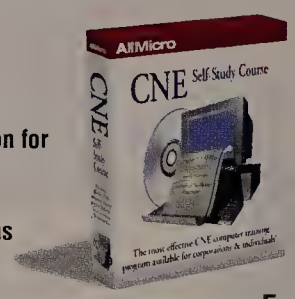

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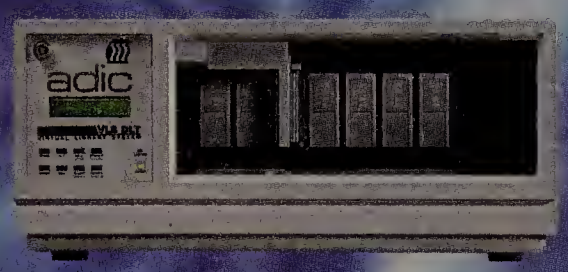

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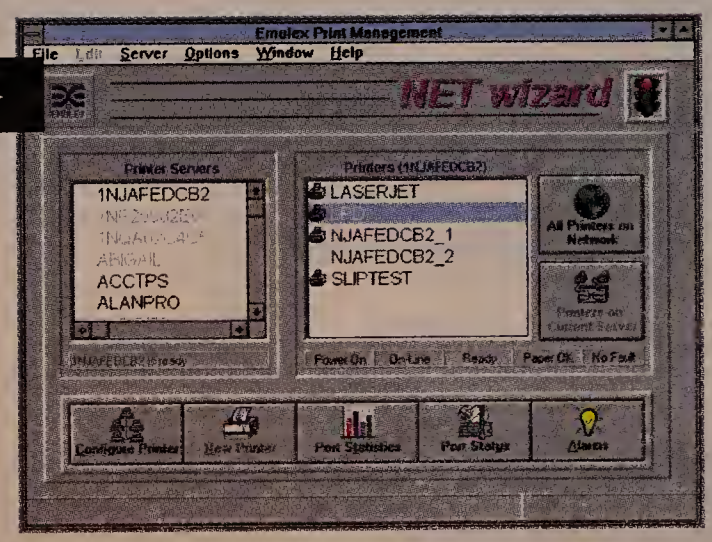

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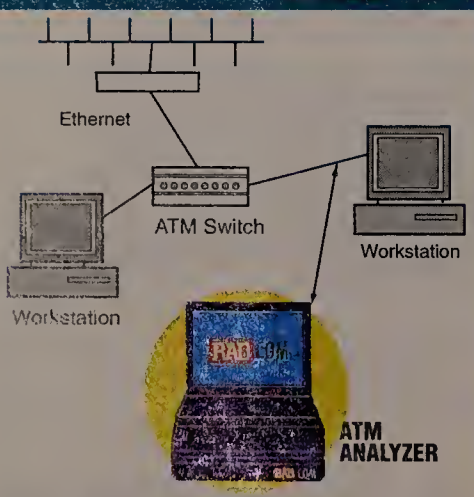

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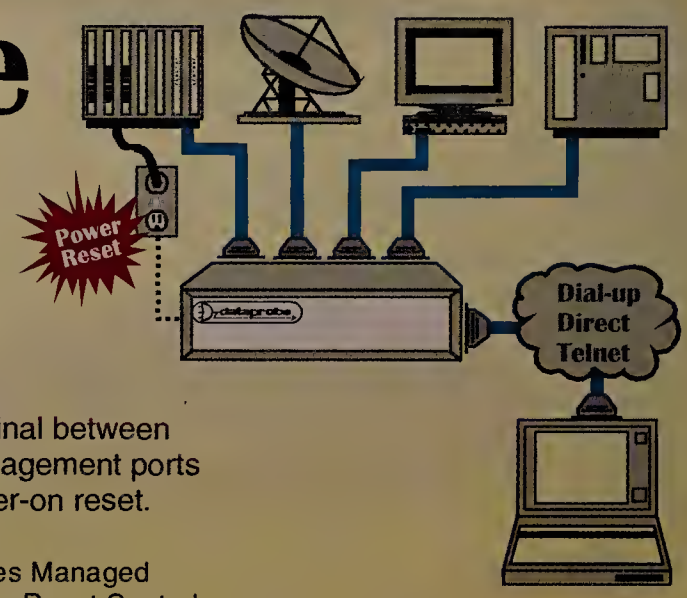

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DIRECTORY OF SERVICES

LDAP

Continued from page 1

into their product lines over the next 12 months or so. These plans — announced at The Burton Group '96 Conference here — reinforced more general commitments made by the vendors in April, when Netscape Communications Corp. sparked the LDAP frenzy by lining up more than 40 supporters and introducing a directory server based on the technology.

Microsoft's *Madigan*

"I'm encouraged. It looks like LDAP will really show up in products," said Durwin Sharp, electronic commerce advisor at Exxon Computing Services. He said he can foresee using LDAP-based directories for holding public-key security certificates and for supporting workflow applications that involve end users tied to what are now separate application directories.

"This is a definite step in the right direction," said James Brentano, director of LAN systems at Pacific Bell. "I'm not convinced the vendors will deliver on all they talked about, but at least they seem to be in agreement on directories to some extent."

Supporters claim that LDAP — a slimmed-down version of an X.500 protocol developed years ago at the University of Michigan — will enable customers to link directories wedded to their messaging applications and network operating systems to emerging intranet and public Internet directories. They say this will make directory management easier, allow end users access to more directory-based data and spawn directory-based applications.

While LDAP momentum is picking up, observers warned that the TCP/IP-based protocol is not the ultimate fix for companies grappling with separate directories across the enterprise.

"LDAP can become a common denominator for a lot of functionality," said Jamie Lewis, president of The Burton Group. "But it is not a panacea."

LDAP is missing some key security and scalability features, such as access controls and replication among multiple master servers, Lewis said. As a result, he figures LDAP will be used to link disparate general-purpose and application-specific directories under an umbrella system called a meta directory.

The three faces of LDAP

The protocol can support:

- Anonymous browsing of directories
- Authenticated communications between a client and directory server
- Referencing and replication between directory servers

SOURCE: THE BURTON GROUP, MIDVALE, UTAH

Ready for LDAP

If such directories of directories emerge, customers should have plenty of LDAP-compliant products to fit into them.

Microsoft, for instance, said last week that LDAP will become the core directory services protocol in the Cairo edition of Windows NT due out next year. While Microsoft's support for the protocol is strong — it also plans to support it in Internet Explorer and Exchange — the company is less enthusiastic about the low-level LDAP API.

Rather, Microsoft is committed to delivering its Open Directory Services Interface (ODSI) technology, a set of APIs for providing consistent access to multivendor directories. ODSI was introduced about a year ago and received Novell and Banyan Systems, Inc.'s blessing, but Microsoft has been fairly quiet about ODSI since then (*NW*, July 15, page 71). Among the reasons Microsoft will stand by ODSI is that it can help with the management of schema — that is, the descriptions of objects contained in different directories.

"You could have the best protocol interoperability in the world, but if you have a schema mismatch, that's a huge problem," said Steve Madigan, director of program management within Microsoft's desktop and business systems division. "Schema management is part of ODSI; it's missing from LDAP."

IBM also announced a broad commitment to LDAP. While the company was not specific about how it would integrate LDAP into its offerings, it said the technology will show up in Notes and cc:Mail during the fourth quarter this year or the first quarter next year. In addition, LDAP will be supported in IBM's Distributed Computing Environment software, Tivoli management tools and Transarc transaction processing offerings.

SEE WHAT A DOLLAR CAN BUY

One of the hottest buzzwords at the Burton Group '96 Conference was meta directory, which refers to a directory of directories. Last week, Burton Group announced it bought the trademark for the term from Zoomit, a small Canadian company that plans to roll out a meta directory product later this year. The Burton Group is putting the term into the public domain in an effort to encourage vendors to develop meta directories.

IBM is also extending the SoftSwitch technology it obtained via the Lotus Development Corp. acquisition into a meta directory product, said Phyllis Byrne, vice president of distributed systems services at IBM.

Novell said it will have an LDAP NetWare Loadable Module out by year-end that will enable Web browsers and other clients to access LDAP servers as well as Novell Directory Services (NDS) systems. As expected, the company also laid out plans for porting NDS to Windows NT and even Windows 95.

Coordinate.com, Banyan's intranet and Internet subsidiary, also is a solid LDAP backer. The company said it will have LDAP supported in all of its products by year-end.

Of course, Netscape also will be rolling out support for LDAP in its products, including the Directory Server, which went into beta testing two weeks ago and should ship during the third quarter. Netscape, which plucked three of the top LDAP developers from the University of Michigan, is also plotting extensions to LDAP, including replication. These extensions are creating some nervousness among users that understand the need to add functionality but also want to make sure that all LDAP implementations work together. To ensure that the vendors' LDAP support passes muster, a user organization called the Network Applications Consortium has created a virtual lab at the University of Michigan to test products for standards compliance. ■

Middleware

Continued from page 1

licensed the software to a venture-funded start-up called New Era of Networks, Inc. (NEON), which now handles all development, marketing and support. Merrill Lynch's guiding hand for the project was Harold Piskiel, who is now NEON's chief technology officer.

NEON has just announced NEONet 2.2, representing the latest changes to the product, which is just now becoming widely available.

NEONet has five parts. One is the messaging and queuing system, which is the basic communications infrastructure that works on TCP/IP and IBM LU 6.2 nets. Next comes the rules engine — a set of user-defined instructions on what to do with the message. The engine grabs an incoming message and refers to the instructions on how to handle it, including how to transform data so it can be read by other applications.

A third component is the dynamic formatter, which actually handles translations and can replicate data among databases. Fourth is a high-level API that integrates all the components. There are also graphical tools for configuring and managing the system. Users buy the server-based software components separately or in any combination.

Together, these elements create what Gartner Group, Inc. analyst Roy Schulte calls a "message broker," a set of applications that form a uniform layer across differing databases and applications. "You can add these functions to existing messaging products, like IBM's MQSeries," Schulte said. "But NEON is one of the few companies going directly at this problem [with a comprehensive product]."

"They make a very compelling case that the previous generation of middleware products leaves too many gaps users have to fill in," said John Rymer, vice president of Giga Information Group, a Cambridge, Mass., market research firm. "I've never seen anything like it."

Neither has Howard Massingill, director of information services at Muhlenberg Hospital, part of Penn Care, Inc., a Bethlehem, Pa., health care provider. Massingill's staff set up a prototype NEONet system in a laboratory using the middleware to link two applications and copy data to a database. The hardest part of the whole project, he said, was getting the application vendors to give the MIS group details of their data formats.

"Within a week of getting the formats, we had the [NEONet] interface runnning," Massingill said. The testers loaded the middleware as much as they could without creating any performance problems.

NEONet is one of a few message-oriented middleware products that also supports a publish-and-subscribe feature — one application registers or subscribes to the data outputs of other applications. The outputs are then automatically messaged to the subscribers.

But NEON has combined this feature with its rules engine. "You can now apply a whole bunch of rules before the message is sent," Schulte said. "The rules they apply are more sophisticated and complex than you get with other products."

NEONet 2.2 features a major performance boost in the messaging and queuing software. Also new is an array of operations that the rules engine and dynamic formatter can perform on the message contents. The release also now works with databases from Oracle Corp. and Sybase, Inc.

The complete NEONet 2.2 is available on SunOS 4.X, Solaris 2.4 and 2.5, HP-UX and Windows NT. Pricing typically ranges from $18,000 to $85,000 for each module.

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We are all flying our IT buzz bombs at increasing speeds. However, some of us have seen our vehicles self-destruct.

The engine, called a pulsejet, was just a cylinder with spring-loaded shutters at the front and a constriction toward the back. It had to be carried by something else to get it going, but once at speed, air would flow in, combine with a propellant and the mixture would ignite. Bang!

The force of the explosion would blow the louvers shut, and the hot gases would exit via the open back end of the engine. At this point, the air pressure in the engine would have dropped sufficiently to allow the spring-loaded louvers to open again. Fresh air would rush in, fuel would be mixed with it, Bang! again, and so on.


Mark Gibbs

The reason the V-1 was called a buzz bomb was that the opening and closing of the shutters and the ignition of the fuel mixture apparently made a sound like a giant demented bee.

And the curious thing about the buzz bomb engine is that the faster it goes, the faster it goes. As air rushes in faster, the rate of the explosions increases, and so it goes faster. . . that is, until the pressure of the oncoming air exceeds the power of the engine or it simply runs out of fuel (in which case, it flies in much the same way a brick doesn't).

Or, the whole thing explodes because someone sets the spring tension too high or too low or adjusts the propellant flow rate incorrectly.

It struck me in a client meeting earlier this week what a perfect metaphor the buzz bomb is for information technology.

My evidence that this theory holds water comes from many sources. For example, Moore's Law tells us that processor power will double every 18 months. This has been shown to have held true since the days of the 8086, and if that's not evidence for the Gibbs Buzz Bomb Theory of IT, what is?

There's also the frustrating fact that having a killer system is a pleasure that currently seems to last about three days ("Yep, jus' got myself one of them thar 6X CD-ROMs and a 166-MHz processor two days ago — top of the line, best that money can buy . . . There's an 8X and a 200 MHz? Darn!")

We are all flying along on our IT buzz bombs at an ever-increasing speed, and some of us, due to poor setup, have seen our vehicles self-destruct, while others have run out of gas and gone hole-digging. The rest of us, still riding our chariots of fire, have precious little time to think.

In the case of the IT buzz bomb, we have to focus on keeping the thing running right. The fuel is money and labor, and running out of either is like running dry and crashing. Running out of information or having too much of it is like getting the fuel mixture wrong.

So the challenge for you folks at the end of the millennium is to keep the entire IT buzz bomb fueled and tuned. Pretty hard when you've got to do that while you're riding it.

What can we do to improve our chances of survival? Much of what I'm hearing from IT managers these days is about simplification — that's why intranets are so popular: They vastly simplify the way that information is captured, manipulated and distributed.

I think there is hope. Perhaps you will be one of those who manage to fly their IT buzz bombs forever. Just make sure you understand the thing you are riding. Keep the thing fueled and the mixture lean. Good luck, and bombs awaayyyyy.

Have you got enough fuel left? Have you got the mixture right? Let Gibbs know at mgibbs@gibbs.com or call him at (800) 622-1108, Ext. 504. Gibbs would like to thank Matthew Mauch of Fighter Rebuilders for his technical advice on buzz bombs.

New FCC rules make the Bells twist and users shout 'Yeah'

I was in a good mood while lodged in a pre-Olympic traffic jam last week. We had just cheered on an Olympic torch-runner and were on our way to a Beatles musical revue. Everyone in the car hummed John Lennon's melody: "Well, shake it up baby, now/Twist and shout."

OK, I lied. We sang it — loud. The Beatles were musical gods. Their secret was composing great songs and performing them with exceptional talent. It's a rare group that can do both.


Dave Buerger

But even the Beatles started with the crutch of playing cover music. Early records featured songs from Buddy Holly and Motown. The Fab Four's version of "Twist and Shout" was written in 1960 by Bert Russell and Phil Medley, but it was inspired by the Isley Brothers' version recorded in 1962.

Local telecommunications service companies also started with a crutch — the monopoly status protected by government regulations. But unlike the Beatles, the Baby Bells have yet to learn how to succeed on their own. While they talk about competition and open markets, they cling to their protected status.

The FCC's new law may cut the Bells' access fees by as much as $10 billion.

That may soon change. New rules expected early next month from the Federal Communications Commission are destined to make the regional Bells twist — and maybe even shout — in pain.

The rule making is an outgrowth of the Telecommunications Act of 1996. As specified by the act, the FCC must quickly determine how to remove the crutch of regulations underpinning monopoly-based local services and, in return, permit the regional Bells to sell long-distance services.

The FCC will first order a reduction of access fees collected by local phone companies from interexchange carriers for originating and completing long-distance calls. This is a major issue: The Bells collect about $30 billion a year in access fees, and the FCC may cut that amount by as much as $10 billion, according to one plan being floated.

Of course, long-distance companies would prefer to pay no access fees. That savings — at least, in theory — would go straight to consumers. But the Bells say access fees are vital, harking back to a time when AT&T used long-distance revenue to subsidize local service rates and provide universal service.

Obviously, the local telephone infrastructure is not free; it costs a lot to build and maintain. The quality is fairly good.

While singing our way to the show, I noticed banks of temporary phones installed throughout downtown Atlanta. BellSouth Corp. alone has installed more than 1,000 temporary phones at Olympic venues. You can't get amenities like this anywhere else in the world.

On the other hand, the Bells are not known for sterling service. Consumers are still forced to put up with occasional arrogance, ineptitude and bureaucracy. They also don't have much choice when it comes to alternative providers. The threat of competition and revenue loss will be a good change agent.

As for universal service, it's a sacred cow that needs reappraisal. No one questions universal telephone service as a subsidized benefit for the poor. But the poor seem able to afford other nonsubsidized goodies. For example, 98% of homes in this country have a TV set — more than those having indoor plumbing. And 57% of households with less than $20,000 in income have more than one TV, according to Nielsen Media Research.

The FCC will set other rules such as pricing for the interconnection of gear from new local access competitors. The upstarts want a big discount; the Bells want to lowball the discount to limit newcomers' profits. It's a natural tension, so expect the Bells to revert to their old ways (read: lobbying for regulatory relief).

FCC officials shouldn't bow to complaints from the Bells. These coddled companies need to grow up and learn to walk without the crutches. The Bells hope users will "twist a little closer" and be theirs after deregulation. But with help from the FCC, they'll eventually learn that the prize must be earned on merit. Otherwise, we'll dance with someone else.

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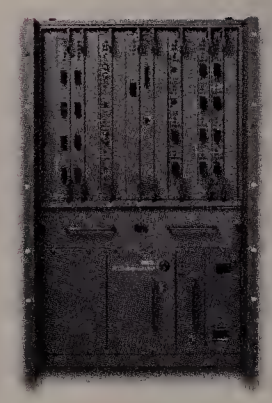

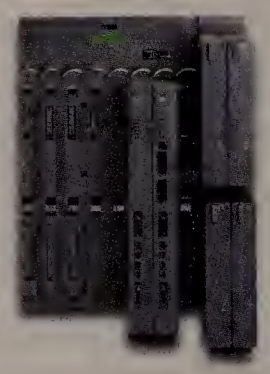

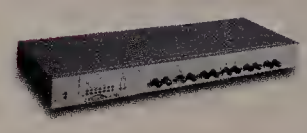

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